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IN ALL THEIR DEPARTMENTS.

BY A COMMITTEE OF PRACTICAL SURVEYORS, ENGINEERS, AND ARCHITECTS, OF MUCH EXPERIENCE AND IN ACTIVE EMPLOYMENT.

ROBERT MUDIE, LITERARY CONDUCTOR.

ROYAL PATRONAGE OF THE FINE ARTS.

THOUGH Britain, taking the average of its population, is unquestionably the wealthiest country in the world, and the one which can afford to spend the most in artistical decorations, yet, as we have often had occasion to remark, there is no centre of encouragement around which the Fine Arts can rally, and depend upon, or be encouraged by, something like systematic patronage. Hence, in so far as those arts are patronized, they receive a patronage of caprice; that is, the artist is not allowed to follow out the dictates of his own taste and the creations of his own fancy, but must follow out the commands of his employer, much in the same way as though he we were an ordinary tradesman, of whose works persons of all classes are deemed capable of judging. He is indeed in much more servile trammels than the humblest of these operative tradesmen; for, if a man were to have a coat or a wig as bizarre, and as much in violation of all taste, as those productions of the miscalled fine arts which he orders, the tailor's goose would instantly be on the wing against him, and the curling-irons of the friseur would be hissing-hot to reduce his monstrous periwig to a cinder. It is from the peculiar relation between the throne and the people of England that the withering wind blows which nips our national taste at the very core, and renders our attempted decorations the strangest motley whereby good taste was ever outraged.

It may so happen that our sovereign possesses the most refined taste, and the most exquisite feeling, of any or all of the fine arts; but this taste and feeling are light as thistle-down in the national scale, because not the smallest tittle of them can be enforced, and very little can afford to be paid for out of the royal pocket. Our Most Gracious Queen, and her accomplished Consort, who, we believe, is a prince of genuine taste, might as well "call spirits from the vasty deep," as order the improvement of the most unseemly thing within the dominions of the former. If, for instance, it were commanded that Guildhall should be reduced to a structure of some architectural congruity and taste, the very beadles would turn up their rubicund noses, and Gog and Magog would be agitated upon their bases with civic-right-preserving indignation; and, if the local authorities had not otherwise willed, Fleet Ditch might, down to the present moment, have run rank and reeking to the sea, scattering pestilence upon the earth, and tainting the heavens up the very zenith.

In consequence of this, our monarchs have, of late years at least, showed but little taste or feeling of the fine arts in any matter which national courtesy left to their decision. By common parlance, George IV. was the most tasteful monarch that swayed the sceptre for many years by-gone; and yet, when we look at Buckingham Palace, and various other things of which it is understood he was *arbiter elegantiarum*, we find in them very little, if any, taste, and not an atom of sublimity or dignity. The only foundation upon which they ground their claim to superiority, is, that of greater expense than uncouth farm-houses or blocks of beautiless buildings in a mercantile street; and this is superiority with a vengeance. Buckingham Palace has very much the aspect of a house of cards, bound together by worsted threads, and propped up upon broken tobacco pipes by way of colonnades. Take away all the garnish, and the thing in itself looks as lanky as a weazle; and if one were passing it thus ungarnished, one would keep as far off as possible, for fear of its sliding down like a Lilliputian avalanche. The only building understood to be reared under the direction of that tasteful monarch, which has the slightest pretension to grandeur, is the new part of Windsor Castle; in this there are three to one opposed to the Royal judgment. First, there was the rock whereupon it is built, and which, though it is chalk, has a sort of vulgar grandeur, or lumping largeness of size to set it off; secondly, there was the former and older structure to copy from; and thirdly, there was the stubbornness of Sir Jeffrey Wyatville, whom the king would have found as difficult to move as the rock which supports the building. When, however, we quit the Castle on the same grounds, and go to visit the gewgaws about Virginia Water, we find that the glory is departed, and we again have nothing but the garnish, dependent upon the partiality of its monarch solely for the expense which it has cost.

Nor can these things be otherwise, for as long as the national assemblies have a veto upon every shilling which the monarch lays out, independently of mere household expenses, so long must that monarch be incapable of standing forward as the high and royal patron of superior taste. Things certainly ought to be different; but while the law is so stringent in the matter, we cannot expect any wholesome difference; and, therefore, to bring the sovereign forward as the nominal patron of the fine arts, is a cruel mockery.

Our thoughts have been called to this subject by an advertisement which appeared in the Royal Gazette, of the 22nd of last November, of which the following is a copy: "Whitehall, November 22nd. The Fine Arts. The Queen has been pleased to appoint His Royal Highness Prince Albert, K.G.; the Right Hon. Lord Lyndhurst; His Grace the Duke of Sutherland, K.G.; the Most Hon. the Marquis of Lansdowne, K.G.; the Right Hon. the Earl of Lincoln; the Right Hon. the Earl of Shrewsbury; the Right Hon. the Earl of Aberdeen, K.G.; the Right Hon. Lord John Russell; the Right Hon. Lord Francis Egerton; the Right Hon. Viscount Palmerston, G.C.B.; the Right Hon. Viscount Melbourne; the Right Hon. Lord Ashburton; the Right Hon. Lord Colborne; the Right Hon. Charles Shaw Lefevre; the Right Hon. Sir Robert Peel, Bart.; the Right Hon. Sir James R. G. Graham, Bart.; Sir Robert Harry Inglis, Bart.; Henry Gally Knight, Esq.; Benjamin Hawes, Jun., Esq.; Henry Hallam, Esq.; Samuel Rogers, Esq.; George Vivian, Esq.; and Thomas Wyse, Esq., Her Majesty's commissioners for the purpose of inquiring whether

42. 2. 14. 107.

advantage might not be taken of the rebuilding of the houses of Parliament for promoting and encouraging the fine arts."

With the political construction of this committee, we have nothing to do; and though we had, we should at once describe it as a perfectly fair one, in which equal justice is done to the two great political parties. So, also, we have no objection to the individual members which compose it, whatever may be their political creeds; for those of them with whose characters we are acquainted, are men of taste, and lovers and promoters of the fine arts, and we have no reason to suppose that the others are different. Hence, the committee, considered merely in itself, is a very well-chosen and competent assemblage of men. There is, however, one feature of its constitution, which cannot fail in very forcibly striking those who study such matters: there is not one professor of a fine art in the whole list, though, otherwise, it is made up of all ranks, from the prince to the private gentleman. Now, wherefore is this? Wherefore is it that the very men who ought to be, and we believe are, best acquainted with the fine arts, and most deeply interested in their promotion and improvement, should be excluded so entirely from a committee devoted to an inquiry respecting those very arts, and open to every other class of the community? Is it that none of the artists has sufficient talents and qualifications? If it is this, then whose fault is it?—the fault of the artist, or of those supposed, if not real, patrons of the arts, from whom Her Majesty has been graciously pleased to select the committee? We say decidedly that, in every case, the fault is chargeable to the latter; and if the fine arts are degraded, it is not by the artists themselves,—for each of them who is worthy of the name loves his art as a matter of course,—but by neglect or ill-placed patronage. We do not deny that all the practitioners of the fine arts are a sensitive set of beings; and that they are the more sensitive, the more highly they are qualified; for, without keenness of feeling, there can be no genuine art. We further admit that all fine artists belong to the *irritabile genus*, though none so much so as musicians and poets. Yet even this is not their fault, but arises from ignorance or injustice on the part of those patrons, who are indispensable to the very existence of artists, except in the case of those giants, who, by sheer genius, overcome and beat down every obstacle, and take the world by storm, in spite of all its partiality and opposition. For reasons pretty obvious, there can be few artists in this country, except patronized artists; and without the aid of patronage, our lamented Chantrey would have been trodden down even lower than the highly talented but unfortunate Baily, or the exquisitely sensitive and cruelly neglected Pitts; but where could have been found the man or combination of men capable of keeping down or elevating Thorwalsden? Much, in either case, might have been accomplished by the oblique and heartless patronage of this country; and it might have broken the spirit of that best of sculptors, but it could not have bent him downwards or upwards.

It thus follows, by the most legitimate of all consequences, that, if every British artist was found unworthy in this committee, the fault is in that most degraded and degrading system of patronage, which keeps the arts under its trammel without discrimination and without feeling; and if, on the other hand, one or more of our artists were worthy of being of the committee, but were excluded from it, it is a cruel insult to them, a most serious injury to the arts, and it brings the qualifications of the whole committee, and of that Privy Council by which they have been nominated, into a most questionable predicament. When we say this, we must exculpate the sovereign from all blame in the matter; for, though the committee has been gazetted in her name, it is perfectly evident that she would not propose a measure that she had not the power of carrying into effect. As a woman, Her Majesty is young, and combines all the fascinations with the modesty of her age; but as a queen, she ranks high in experience and perception above many ancient dames, both female and male, and is not to be caught by those silly lime-twigs which hold them captives, like little birds of the winnowing wind—which wind blows from them the tiny seeds as lightly as the chaff.

We must, therefore, view the originating of this committee as a project of the Privy Council, or some other department of the executive, and not of the sovereign, of her own royal will and pleasure; and, seen in this light, it is quite a puzzle, inasmuch as the official advisers have included in the committee as many of their political opponents as of themselves. It is true, indeed, that it is not likely to be "a loaf and fish" matter to any of those nominated to it; and, therefore, there has been no giving away of the viands of office to men of opposite principles; but still it is more of an honorary than a working committee, and that one party should share honours with an opposite party, is not according to the wonted system. If, therefore, we could be political on the subject,—and it is difficult to touch upon such a subject without being a little political in thought,—we should be inclined to say, that is to think, that it looks like the forecast shadow of a coalition between the parties, an event which the very highest interests of the country demand. It was well said by the great Selden, of such small matters, "Cast up a straw, and it will show you how the wind sits, which you shall not find out by casting up a stone." Whether this is really the portent of the committee in question, we pretend not to decide, but if it is not, it is very difficult to decide any comprehendible object for the appointment. The committee are to inquire whether advantage might not be taken of the rebuilding of the houses of Parliament. Little has ever been done in this way by the meetings and speeches of the members; and this is, in itself, a pretty strong argument against much being done by or during the mere rebuilding of the houses in which they are to meet.

There then arises this question, What are the fine arts, the promotion and encouragement of which the committee is to consider; and what are to be the means and extent of the resulting operations? The very same parties, if not the same individuals, sat in judgment upon the plans of the Houses; and how did they encourage and promote the fine arts there? Why, they cut down and mutilated the design which they adopted, and so deprived it of all congruity and harmony, that it will be very different from what the artist intended. Now, to mutilate the principal subject for the sake of saving a few thousand pounds; and thus removing—increasing—the absurdity, by expending twice or twenty times the sum in garnish, which looks well in no case, and is perfect excrescence in many, is promoting the fine arts, is it?

One reason is, that the original architect, the only man who has proper knowledge and feeling of the structure as a whole, is not included among the garnishers, or so much as consulted by them. Thus "the Committee of Garnish" are appointed to direct that which they do not understand. This is a sad damper to the artist, cold enough for quenching the most ardent fire of genius that ever was lit up; and while such shall be known and sanctioned in the country, alas for the fine arts. The grand nostrum for the population

—that which is to cure all its diseases as effectually as the man cured those of the calf when he cut its throat, is Emigration; send the informed and the active out of the country, in order that ignorance may be wisdom; expatriate the working people, so that the sluggards may doze in peace, and the men of mere stomach gormandize in plenty; away with the bees, so that the drones may stock the hive with honey withal, and be goodly nursing-fathers to your queens, and conservators of all your cells. The storm is on the wing, swifter than that of a thousand eagles, the waves are yeasting welkin high, and the vessel is labouring in the trough of the abyss: overboard with the sailors; and save, O save! the guns; they will be wanted when the day of battle comes, and if hap should be to founder, they will be safe at the bottom of the sea, and you will find them there. Such in effect, if not exactly in words, have for years been the out-breathings of the mighty mother that broods dominant upon the bumps of British sapience.

We do not say that there is any close and palpable similitude between the fiction of navigation and the fact of this dismissal of the artist when the arts are to be encouraged and promoted; but when we seek among the subjects of vague analogy, such as men and elephants, *ignes fatui*, and all other things which have the least possible analogy, and the greatest possible disparity, we do find something like a foundation of a single grain of sand upon which to build a comparison! Far be it from us to hint that there is any relation between this mode of dealing with British artists, and the conduct of the Roman Emperor who divested the senate of the last faint shadow of power, and then commanded them to find out the best—sauce for a turbot; and yet, inasmuch as we cannot think of the one without the other arising in suggestion, there must be some analogy. The foremost man of his class—as we must conclude from his being appointed by men so wondrous wise,—is appointed to plan and execute a public work; and no sooner has he begun, than in comes a committee pushing him aside, and inquiring, not of him, but of themselves, whether, during the execution of the work, anything can be done to improve and promote the fine arts—just as if the work itself were not enough for this purpose. Here is a parallel case: a man gets sick—he may be one of this committee, or he may not: he gets sick, and the foremost physician of the day is called in, not for the passing matter of "the tongue, the pulse, and guinea;" but to see the patient to such deliverance as it might please God to give. Suppose that the physician were thus engaged; that he studied continually the constitution and habits of the patient, and all the symptoms of the disease; and that, having brought the whole of his long-earned and well-tested experience to bear on these matters, he had decided on the regimen and medicine, and the patient had begun to be treated according to them. Suppose all this had been done; and that, in the absence of the physician, a committee of friends had been appointed *by themselves*, to inquire whether advantage might not be taken of the attendance of the physician for promoting and encouraging the health of the patient: What would the doctor and the public say of such a committee? Why, that before they were so appointed *by* themselves, they must have been *beside* themselves.

Perhaps, however, we misunderstand the case: the fine arts alluded to may not be therein any way connected with a building, or the appropriate decorations, but some other fine arts which do not in any manner touch on the province of Mr. Barry, as architect of the New Houses of Parliament. There are three categories of arts, of the names of which "fine" forms a first part. There are the fine arts, the finical arts, and the finessing arts. The fine arts are the only ones which have a legitimate connexion with taste, but when sterling they are saucy arts, and disperse the other categories. The finical arts are the fine arts decreased in size and distorted in shape, and the finessing arts often help parties to situations to which they have no proper claim or title. The fine arts are divided into classes, but one does not see how the rebuilding of the Houses of Parliament can, or possibly could, encourage any class but that connected with building. If it should surpass all the structures that ever were erected, it will not enable a poet to sweep the chords of a loftier lyre, or a musician to scrape the strings of a more sonorous fiddle. A misgiving indeed comes somewhat over one about the poesy; for the gentle and venerable bard of Memory is the only artist named on the committee; but we suppose that he has been named for his love of pictures, more than for his power of song. There may be some connexion with the finical, because the finical and garnish are allied in holy bands, as may be seen by the emblems all over London, and many other places. But if there be any finessing art in the matter, that will, as is usually the case, be carefully concealed.

Therefore, when we dissect away the exuviæ, we find that, even supposing the case to be meant to come to a conclusion, the only proper conclusion to which it could come would be the promotion and encouragement of those fine arts which apply to the decoration of a building, and of them, such only as are fitted for a senate house. These are of three kinds, fresco painting, stucco, and sculpture. Of the first we can have none that would be native, because we happen to have no fresco painter—our patronage of the arts never having taken that direction; and surely, if we are to promote any fine art in the decoration of our houses of Parliament, that ought to be British. But, granting that we had the artists, it would be somewhat out of place to have their works in the senate-houses, when there are none in the palaces of the monarch, or the mansions of the nobles. In a gallery or saloon, or indeed any place of resort for enjoyment, such decorations, well executed, would be quite in place; but we have our doubts about them in houses of solemn assembly.

Again, as to stucco ornaments daubed on by a committee in supplement to the architect, they would be utterly tasteless. All things of this kind are parts of the fabric of the edifice; to stick them on without advice of the architect would be very bad; and in a solemn building even he should be very sparing in their use. If they are numerous and obtrusive, they give a light and flippant air to the solemn structure; and if they are at the same time rich and voluptuous, they suggest the most incongruous associations; for, who would think of debating the weal or the woe of nations in an apartment decorated for Cyprian orgies? Therefore, if such garnish had been stuck on by Barry himself, common sense would have torn it down; and far more readily would the same be done with the tasteless incongruity of a supplemental committee.

Sculpture is the only remaining means of decoration, and what shall we say about it? We pass by the lumps of stone in the civic halls, which are turtle and venison, green fat and haunch all over; and so we do the little panels frosted all over, and most appropriately called "bah! reliefs," which are let into the walls of palaces, and hight "freizes," as if it were "chilling" to look upon them. They are like the small ornaments in an expensively printed book; they attract the eye where there is nothing to inform the head or

warm the heart, and so we set them aside and pass on. But when we find marbles of men in other places—as the late Lord Erskine in the Court of Chancery, Lincoln's Inn, we always think of ghosts, come on monitory warnings to their successors. They excite different ideas certainly, but no higher ones than the effigies of the late Major Cartwright, sitting in Burton Crescent, apparently teaching the passing crowd how to mend their "soles." Such things are not very appropriate any where, and they would be sadly the reverse in a solemn senate house.

Even the Parliamentary scenes, strictly so called, would be out of taste and keeping;—the real and sad tragedy of Chatham in the Lords, the not very genteel comedy of Canning giving the lie, and Brougham snatching up his hat; and the *ultra*-finical "dagger scene" by Burke;—these would not show well in marble.

Therefore there is no fine art that can be promoted or encouraged by rebuilding the Houses of Parliament, except architecture, and, with all due deference to the committee, that had better be left with the architect himself; for if he is incapable of working out his own plan, it is by no means likely that any committee, however talented, can give him useful assistance, or indeed assistance of any kind which shall not be worse than useless.

In the actual construction of a great public edifice, as well as in every other work that requires many manual operations, there must be a division of labour; and the better will the individual labourer understand his portion of the work, the more exclusively that he devotes his mind to it, and leaves other matters alone. There must, for instance, be one man, or set of men, to dig the foundations, another to lay the bricks, a third to hew the stones, a fourth to chip and fashion the timber, and so on all for the different operations; but besides these, anterior to them, and guide and government of them all, there must be an "Inigo Jones," in whose mind the whole fabric must be elaborated, fashioned, and brought to maturity, before a single foot of the foundation is excavated, or one block of stone fashioned for its surface. In his mental structure there is, and there can be, no division of labour; for no one man can assist another in working out a thought, any more than he can assist the heart and arteries in beating, the lungs in respiration, or the body in any one of its functions. If any second party should attempt to assist in this, he would do, or could do, nothing but mischief: of this we have but too many instances in buildings and other great works which have been originally planned and partly executed by one man, and then have passed over to another, even though both were of acknowledged abilities. The work finished in this manner has always been more expensive than if one had contrived it, and carried it onward to perfection in all its parts; and after all, it has been a patchwork, and more unseemly in appearance than the design of a very inferior artist when carried on and completed by himself. We say nothing with reference to Buckingham Palace and Sutherland House,—the upper part of which last bears very much resemblance to a royal buckled on the top of a travelling carriage; but we may refer to some subjects which are better; as, for instance, Westminster Hall, and what remains of the modern buildings clustered about it.

The Hall is a building in excellent keeping, but it makes a strange discord with the buildings to the left of it. We say nothing of the pill-boxes in which the courts are mewed up, as if they were emblematical of the fact that law is the most drastic of all physic; and as little do we allude to the committee rooms of the Commons, in which all sorts of sayings are said, all sorts of battles won, and all sorts of doings perpetrated; but have led the observer, who has eyes for taste of any kind, to walk round the remainder of the northern, the western, and what remains of the southern façade, and say, what congruity there is between the entrance of the Hall, and the meagre Gothic, and still more meagre Roman, which eke out the other parts of that line. When the alterations were made, the portion which is now a sort of Gothic, or something different from a straight wall, with rectangular holes, appeared to have been a sad poser to the architect. It seems the contriver could hit upon no means of transit from the simple Gothic to the senseless mock Roman; and therefore, in the first instance, he carried up the said mock Roman to the very angle of the Hall; but this looked so very queer, from the excellent view that Palace Yard affords of this front, that a common bricklayer, or even a hodman of any experience, could not look at it without grinning. This rendered an alteration necessary; and the present kind of Gothic was put up, separated from the Hall by a sort of notch, showing that there was consanguinity between them; but the said Gothic was carried in close juxta-position with the bastard Roman and the west front, perhaps to point out that they were "*Arcades ambo*," that is, "bad ones both." When so much public money is expending upon the new Houses of Parliament, it would be wise in the committee of taste to leave Barry and his building alone, sweep away all this rubbish, clear the north wall of the Hall, restore that, and thus make a spacious opening,—at the same time they ought to be very particular in having something neat and in keeping, as far as Abingdon Street, in the room of that vile structure, the late House of Lords, which the fire has most justly consigned to "the tomb of all the Capulets"—or some less worthy place.

Let the observer now turn his attention over the way, and examine the Abbey. Here, again, we say nothing of the interior, and especially of the blocks of fools, which are conglomerated in dozens there, while the statue of Byron, by Thorwalsden, is excluded, as if the statue of a man of the highest talents, executed by the foremost sculptor of the age, would most unorthodoxly shame and eclipse the tasteless dulness, and small cupidity, of the reverend dean and chapter. A certain facetious monarch is said once to have knighted reverence; and truly one cannot think on some of the deeds of those reverend persons, without wishing them heartily knighted—on the other end.

We pass over these matters, and also various others which naturally attract the notice of ordinary visitors, and confine ourselves to the near view of the front, or succession of fronts, from the east end entrance of Henry the Seventh's chapel, to the two terminal steeples, towers, or turrets on the west. Of this, we shall take the larger and more central portion, namely, the Abbey itself. In it, there are a grandeur and sublimity, unbroken by frippery, or undegraded by gew-gaw ornaments, which place it very nearly in the rank of our sacred structures of the noblest class. The only objection to it is the stump of a mock tower, a modern nothing, which looks, for all the world, like a great beggar-box, made to receive the pennies and sixpennies demanded from the public, before they can see the great and small statues in Poet's Corner. To one's left there is Henry the Seventh's chapel, frosted over with small ornaments, till it looks more like a bridal cake than a micrological memorial; and, elaborate as it is, and frequent and costly as the repairs of it have been, one heartily wishes it on the top of Snowdon, or at the bottom of the Atlantic. To the right, the towers are different, but not better. They are, we believe, the work of Sir

Christopher Wren; but that great architect—and truly he was a great one in his way—always broke down when he departed from the Roman style, which appears to have been everything in his estimation, although he sometimes added parts which no Roman would have tolerated. In these little decorations, we must, however, make allowance for the difference of climate, and also the different purposes of the buildings. The great majority of them are churches, and a church externally copied after a Roman or a Greek temple, could not internally be made a very fit place for christian worship.

The towers at the west end of Westminster Abbey are not Gothic or Roman, or a mixture of the two, but things which are *sui generis*, and have no counterpart any where upon earth. There are little scraps of them meant to be Gothic, and others meant to be Roman, but there is no unity, no majesty, and no apparent general purposing; so that all one can say is, that, from the mass of stone they contain, they are "quarries upon earth,"—and nothing more.

Those who consider merely the surfaces of things, or things individually, without regard to their relations and bearings upon each other, will be very apt to suppose that the observations which we have now made have no connection with the arts after which our journal is named, and to which it ought to be chiefly devoted. But parties who suppose this, take a view of the subject which is narrow, abominable, and erroneous. The engineering arts are, in one or other of their departments, intimately connected with every physical subject, and there is not one fine art or subject of taste which does not bear down upon them to some extent or other. Taste is the parent of all the arts, excepting those of the lowest grade, which minister only to the animal passions, or the semi-animal passion of the accumulation of money. Were we to glance on the progressive history of nations, we should find that taste has been the primary stimulus to every improvement; that men never attempt to construct even snug cottages, until the hovel and the cave had become offensive to their feelings; that they never thought of the coarsest cloths, or even of mats, for garments, until they felt ashamed of themselves in the skins of animals; and the same has gone on to the greatest improvement which has hitherto been made, and will be the stimulus to future improvements.

COUNT DE PAMBOUR ON LOCOMOTIVE ENGINES.

TO THE EDITOR.

SIR,

In a paper written by me, and inserted in your number of September last, *On the Momentum proposed by Mr. Josiah Parkes, as a measure of the mechanical effect of Locomotive Engines*, the following passage occurs: "The author tells us that he is more accustomed to handle the hammer than the pen." I have since perceived that I had, there, attributed to the paper of Mr. Parkes, *On Steam Boilers and Steam Engines*, a sentence which I had read in the useful work of Mr. Armstrong, *On the Boilers of Steam Engines*, preface, page xi, Weale, 1839. The two works having come to me at the same time, and being precisely on the same subject, I had made the error of ascribing to the one what in reality belongs to the other. This point is, however, without the least importance, having no reference to the arguments presented in my paper, and I correct it only for the sake of accuracy.

Since the publication of the paper above alluded to, Mr. Parkes has printed, in several periodicals, a letter, in which he accuses me of having misrepresented his sentiments, in my refutation of his strictures against me. I had thought, first, that if my paper itself were put under the eyes of the persons who had read Mr. Parkes's letter, it would, by the full references contained in it, show sufficiently that I had not misrepresented the sentiments of Mr. Parkes; and I had in consequence only asked of the periodicals who had published Mr. Parkes's letter, to insert that paper as an answer. But this request having been refused by the *Literary Gazette*, and a mutilated part only of the letter which I had sent with the paper having appeared in the *Mining Journal*, with the omission of what I considered the most important passages, it becomes necessary for me to make a different answer. Therefore I beg you to insert in your next publication, the following paper, as a reply to Mr. Parkes's allegations.

I remain, Sir,

Your very obedient servant,

G. DE PAMBOUR.

October 18th.

SUPPLEMENTARY PAPER: ON THE MOMENTUM PROPOSED BY MR. JOSIAH PARKES, AS A MEASURE OF THE MECHANICAL EFFECT OF LOCOMOTIVE ENGINES. BY THE COUNT DE PAMBOUR.

In a former paper, inserted in the *Inventor's Advocate*, August 28th, 1841; *Civil Engineer and Architect's Journal*, September 1st, and *Surveyor, Engineer, and Architect*, same date, we have proved that the strictures presented by Mr. J. Parkes, in his paper *On Steam Boilers and Steam Engines*, inserted in the *Transactions of the Institution of Civil Engineers*, vol. iii., against some of the experiments of our *Treatise on Locomotive Engines*, are entirely founded upon errors of his own; and, besides, that his *momentum*, or intended "standard," of the mechanical effect of locomotive engines, which he proposes to substitute in place of every other research on the same subject, leads him to conclusions and results altogether faulty.

However, as in a letter inserted by Mr. Parkes in several periodicals, (*Literary Gazette*, September 18th, *Mining Journal*, same date; and *Civil Engineer and Architect's Journal*,) he complains that, in answering to his strictures, we have misrepresented his *sentiments*, we shall now add a few more observations, to show that we have not misrepresented the sentiments of Mr. Parkes; and, besides, that it is not upon sentiments, but upon facts, that we can establish clearly *that the whole of the calculations and tables of Mr. Parkes are erroneous*; and as every one of his conclusions and strictures are founded upon the numbers obtained in his tables, *that every one of his conclusions and strictures are equally erroneous.*

For that, we shall resume in the same order all the articles of our former paper, quoting more particularly the facts or the expressions of Mr. Parkes, upon which is grounded our refutation.

First. We have said that, to calculate the mean pressure of the steam in the cylinder of each of the engines submitted by us to experiment, Mr. Parkes uses the *average* velocity of the whole trip

between Liverpool and Manchester. This fact cannot be denied, and is made quite evident by looking only at his Table viii. col. 10; Table xiii. col. 9; Table xvi. col. 2; in which the velocities are headed, *Mean velocity of the engines per hour*, and are in fact the *average* velocities of our experiments, given page 175 of the *Treatise on Locomotive Engines*, 1st edition; and page 253, 2nd edition, with the exception only of the cases in which Mr. Parkes has increased the velocities, from a pretended correction of his own, of which we shall speak in a moment.

Now, in recurring to our former paper, same article, it will be seen that such mode of calculating the pressure in the cylinder, from the *average* or *mean* velocity of the whole trip, is altogether faulty; because it gives only the pressure which would have taken place, if the whole trip had been performed at a *uniform* velocity. But the velocity varied *considerably* in the different portions of the trip, according to the more or less inclination of the part of road traversed by the engine, as may be seen in our detailed table of those experiments (pages 225 to 234, 1st edition, and pages 389 to 394, 2nd edition, of the *Treatise on Locomotive Engines;* and in taking account, *as ought to be done*, of the time during which each partial velocity has been continued, we have proved, in our first paper, that the *real* mean pressure of the steam in the cylinder is very different from the pressure given in Mr. Parkes's calculations. We can, therefore, safely conclude that the pressure and correspondent volumes of the steam in the cylinder, presented by Mr. Parkes as the result of his research, are entirely faulty.

Secondly. We have just shown a first error, which Mr. Parkes introduces, as a fundamental basis, in all his calculations, and which has nothing to do with his *sentiments*. But he does not stop there. We have said that, moreover, he increases almost all the average velocities one-fifth; and to be assured of this, it again suffices to compare, in his paper, Table viii. col. 10, Table xiii. col. 9, or Table xvi. col. 2, with our own Table (page 175, 1st edition, or page 253, 2nd edition of the *Treatise on Locomotive Engines*). It will be found that the velocity of *Vulcan*, in experiment vi. (Table viii. of Mr. Parkes), is increased from 22·99 to 26·90 miles per hour; that of *Vesta*, in experiment v., from 27·23 to 31·60 miles per hour; that of *Atlas*, in experiment iii., from 15·53 to 18·15 miles per hour; that of *Atlas*, in experiment iv., from 20·59 to 24·07 miles per hour; that of *Leeds*, in experiment viii., from 21·99 to 26·70 miles per hour; that of *Fury*, in experiment ix. from 18·63 to 21·79; and that of *Fury*, in experiment x., from 21·99 to 23·00 miles per hour. So that, out of ten experiments extracted from our work, seven have been made entirely false by this alleged correction to the *observed* velocities; and this is worse than if the whole of them had been falsified in the same manner, as it would have left, at least, the same proportion between the results. Mr. Parkes makes the same addition to the *observed* velocities, and therefore introduces the same error in calculatng the experiments of Mr. Edward Woods with the *Hecla*, since we find (page 112),

Mean velocity during the trip . .	29·47 miles per hour.
Difference for gradients . . .	1·46
Mean velocity on a level	30·93

Mr. Parkes falls into this error, because, in speaking of fuel, it is said in our *Treatise on Locomotive Engines* (page 324, 1st edition. and page 311, 2nd edition), that when the engines ascend without help one of the inclined planes of the Liverpool and Manchester railway, the surplus of work thence resulting for them, equals, on an average, the conveying of their load to about one-sixth more distance; that is to say, that the engine will, in that case, do as much work, or consume as much fuel, as if it had conveyed an equal load to a distance greater by one-sixth, on a level. And the *critic* thence logically concludes (page 86), that the *velocity* must be by so much increased, without perceiving that this correction refers only to the *work* done, and as a consequence, to the corresponding consumption of fuel, but not to the *velocity*; which would suppose, not only that the load has been conveyed to one-sixth more distance, but, besides that, it has been conveyed there *in the same time*.

Respecting this mistake, we have also proved that the error of Mr. Parkes has the double consequence of increasing the pretended effect produced, and lowering the pretended pressure of the steam in the cylinder, so that the proportion between the power applied and the effect produced, is made doubly erroneous, and introduced so in the Tables.

All this is certainly undeniable, and rests upon tables and facts only, not upon sentiments. And when we say that the *whole* of the calculations and tables of Mr. Parkes are grounded upon those mistakes, it cannot be denied either in looking only at Table viii. col. 10; Table ix, col. 19; Table xiii. col. 9; Table xiv. col. 3; Table xvi. col. 2. It will be there seen, that *every other column is depending upon the alleged velocity of the engines*. Therefore, we are right when we conclude that the volume and pressure of the steam consumed by the engines (Table ix. col. 26, 29), the horse power produced per cubic foot of water vaporised, or the quantity of water and coke employed to produce one-horse power (Table x. col. 44, 45, 49, &c.), the *momenta* generated per second (Table xiii. col. 11, 12; Table xiv. col. 9, 10, 11), and, finally, all the consequences derived from the comparison of the results obtained in these tables, about the pretended inaccuracy of the experiments, or the respective effects of locomotive and fixed engines, are in every way erroneous.

To show, by a particular example, the fallacy of the results to which Mr. Parkes has been led by his wholesale and faulty way of calculating, with a wrongly averaged and greatly exaggerated velocity, without taking account of the gravity, or of any of the other resistances really encountered by the engines, we refer to the two experiments of *Fury*, of which Mr. Parkes says (page 128), "A reference to the *Fury*, previously adverted to as giving anomalous results, exhibits that engine as having performed more work at 23 than at 21¾ miles per hour, by the ratio of 24 to 19; it is therefore with certainty we conclude one or both of these experiments to be erroneous." We have shown that this consequence presented by the *critic* with such certainty, proceeds only from his having neglected to consider that one of the experiments had taken place from Manchester to Liverpool, and the other, on the contrary, from Liverpool to Manchester. But, on account of the general rising of the road from Manchester towards Liverpool, the gravity opposes more resistance in that direction than in the other; so that, although the load of the engine was lighter in that trip, yet there was more work required of the engine, to convey that load to the other end of the line. In fact, in making the calculation as it ought to be done, that is to say, in taking account of the gravity, *overlooked by Mr. Parkes*, it is found that in the trip made from Manchester to Liverpool, the work done by the engine amounted to conveying 1964 tons to 1 mile, or 65·5 tons to 30 miles on a level, and in the other

trip, to 1837 tons to 1 mile, or 60·6 tons to 30 miles on a level. Therefore, the engine ought to have employed more time in performing the first trip than the second, which in fact it did, and which, concurrently with the other errors of computation of Mr. Parkes, had led him to conclude, "with certainty," these experiments to be erroneous.

Thirdly. Mr. Parkes (page 82, 83) says, "The pressure deduced from the sum of the resistances, given in col. 9, for M. de Pambour's experiments i. to x., is composed, first, of the friction of the engine without load, which includes the resistance opposed to it as a carriage, in common with the train; secondly, of the additional friction brought upon the engine by the load; thirdly, of the resistance of the load at 8lb. per ton. According to the author, these three items include all the resistance overcome by the steam, excepting that occasioned by the blast in excess over the pressure of the atmosphere. The amount of the latter should, therefore, be ascertainable by comparing the whole force exerted by the steam on the piston, with the force assigned as requisite to overcome the aforesaid three out of the four component parts of the total resistance. The difference between these pressures should represent the precise amount of the counter-elasticity of the steam in the blast-pipe." So, it is clear that, as we said in our former paper, Mr. Parkes calculates the pressure owing to the blast-pipe, merely by taking the difference between the valuation of the divers resistances, and *his own* result of the pressure of the steam in the cylinder. Now, we have already proved that this last result, obtained by Mr. Parkes, as representing the pressure in the cylinder, is altogether erroneous: therefore his supposition of the pressure in the blast-pipe must be equally so. But, besides, it is evident that such a mode of proceeding, by merely taking the difference between two assumed quantities, to establish the value of a third unknown, could never give, for this one, a value sufficiently certain to make it the test of experiments and *facts;* since every thing neglected in the calculation, as water lost by *priming*, resistance of the air, gravity, &c., would necessarily pass to the account of the pressure due to the blast-pipe, and falsify it. Consequently, if, by this calculation, Mr. Parkes is led to very inaccurate results, he ought not to be astonished, and we are not certainly.

Fourthly. Mr. Parkes (pages 98—99), in speaking of our two experiments made with the engine *Leeds*, says: "The author also has informed us that in the two experiments, the pressure in the boiler was precisely the same, and the regulator opened to the same degree. The power applied in the two cases was, consequently, precisely equal, and equal weights of water as steam passed through the cylinders in equal times; whence it results that the effects should have been similar. The expenditure of power was, however, greater by more than a third in the second, than in the first case, to produce like effects, for we see that the effective horse-power required 85·43 lb. of water as steam in the second, and only 60·94 lb. in the first; and (page 100) if, as asserted, the pressure in the boiler were precisely the same, and the regulator opened to the same degree in the second as the first experiment, equal power must have been generated and expended in the same time, though, at the higher velocity, the lighter load was moved through a greater space in that time. Had M. de Pambour reduced his data to the terms of value in these tables, he must inevitably have discovered the numerous errors of fact and deduction, which are now brought to light."

Now, it is clear that we did not misrepresent the sentiments of Mr. Parkes, when, in our former paper, we said that he concluded against the accuracy of the experiments, because, in the two cases cited, the useful effects of the engine had not been the same. But we have proved, in that paper, that, in spite of an equality of pressure in the boiler and of opening of the regulator, there is always more loss sustained by the engine, in overcoming its friction, the resistance of the air, &c., at a great than at a small velocity. Therefore the useful effect produced, or *effective horse-power*, ought not to be *similar* in the two cases; and the "numerous errors of fact, and deduction, which are now brought to light" by the *critic* and his tables, are nothing but a new misconception.

Fifth. We have said that Mr. Parkes submits the two same experiments, and the other experiments afterwards, to the test of a new principle, which consists merely in his making a confusion between the vaporizations effected in traversing the same distance, and the vaporizations effected during the same time. This will be proved by the following passage, in which it will be seen that Mr. Parkes quotes our words relative to the vaporization *for the same distance*, and afterwards applies them to the vaporization *in the same time*. We have marked in *Italics* the words which make this mis-reasoning quite evident. He says (page 99), "In his *Treatise on Locomotive Engines*, pp. 310—312, M. de Pambour states a near parallel to these two experiments by supposing a case of "the same engine, with the same pressure in the boiler, travelling *the same distance* with two different lords. *The distance travelled being the same*, the number of turns of the wheel, and consequently of strokes of the piston, or cylinders of steam expended, will be the same in the two cases. So the mass or weight of steam expended will be, in each case, in the ratio of the pressure in the cylinder." Now the author has given us the resistances on the piston, which amount in the first case to 38·43 lb., and in the second to 23·93 lb. per square inch; and yet he assumes an equal expenditure of water as steam, *in equal times*, in the two cases. To be consistent, however, with his own rule above quoted, viz. that the weights of water consumed as steam are to each other as the resistances against the piston, it is obvious that if, in the first case, 30·26 lb. of steam passed through the cylinders in one hour, 21·66 lb. only would have been expended in the second case." And (page 101): "But we have already seen that if the quantity of water were correctly taken in the first case, a less quantity must have been consumed in the second, as the load upon the pistons of the engine in the two experiments, deduced from their velocity and assigned resistances, differed in the ratio of 38·43 to 23·93; *and the water as steam consumed, in equal times, must necessarily have varied in the same ratio, or as 30·26 lb. to 21·66 lb.* It would be fruitless to pursue this analysis further, and vain to attempt the rectification of errors, a task which properly belongs to the author."

We see that the passage quoted from our work establishes distinctly, that when an engine draws two different loads over the same ground, the quantities of water vaporized, *for the same distance*, must be in proportion to the total pressure of the steam in the cylinder. But Mr. Parkes concludes from it, that the quantities of water vaporized, *in the same time*, must be in the ratio of the pressures. But we have proved, in our former paper, that those two consequences are quite contrary to each other. Therefore the principle alleged by Mr. Parkes, and which he uses afterwards throughout his paper, to "test" the accuracy of the experiments, rests merely upon a new mistake of his own, which consists, as we have said, in making a confusion between the va-

porization for the same distance, and the vaporization in the same time; so that there is no occasion to "attempt the rectification of errors" discovered by the test of this *new* principle.

Sixthly. Mr. Parkes, comparing the locomotive with the fixed steam-engines, says (page 90): "Thus the fixed non-condensing engine is the most economical of the two; but if M. de Pambour's data are correct, we must abandon all preconceived opinions, and all belief in the accuracy of pre-ascertained results on the non-condensing engine; we must reverse our engineering creed, and acknowledge the fixed non-condensing engine, with its simple atmospheric resistance, to be far inferior, in economy of steam, to the locomotive, with its plus atmospheric resistance." And (page 98): "for it is utterly impossible that the locomotive should accomplish an equal effect, with $\frac{1}{3}$ less steam than the condensing engine. To go over this ground again would be but a mere repetition of arguments previously used."

By these passages it is fully established that Mr. Parkes would, as we have said in our former paper, conclude against the accuracy of the experiments, because a locomotive engine cannot possibly produce a useful effect equal to that of a high-pressure non-condensing engine, or to that of a condensing engine. But we have proved that the case may occur; and Mr. Parkes concedes it himself, a little further, (page 156, 157), in saying, of a sort of locomotive engine under his charge, "the consumption of steam per effective horse-power per hour, has been shewn to be 120 lb. for the fixed non-condensing engine, and for the locomotive under review 112·54 lb., which proves the latter to have been the most economical of the two, at nearly the same pressure. This is a new, and perhaps an unexpected result." Therefore Mr. Parkes's first objection was good for nothing. But, besides, it must be borne in mind that the velocities used by Mr. Parkes to calculate the effects of the locomotive engines, being nearly all considerably increased, as has been proved above, he must necessarily arrive at exaggerated results for the effects which he supposes to have been produced by those engines. Therefore the new argument presented by the critic, against the accuracy of the experiments, is again the result of his own errors of reasoning and calculation.

Seventhly. To prove that the same unfounded arguments have been urged by Mr. Parkes, and with the same results, against every other engineer who has published experiments on locomotive engines, we need only quote the following passages.

Respecting the experiments of *Mr. Robert Stephenson*, Mr. Parkes says (page 105): "They contain within themselves abundant proofs of error in the quantities assigned to the consumption of water as steam. Now, if the evaporative data are correct, it would appear by the ratio which the volume of steam consumed bears to that of the water which produced it ($\frac{1}{10}$th being deducted for waste), that the absolute pressure upon the pistons in this case amounted to 81·95 lb. per square inch; but there was only 50 lb. in the boiler! If, therefore, 77 cubic feet of water passed through the cylinders in an hour, in the shape of *pure* steam, the blast pressure or counter effort above the atmosphere, was 34·41 lb. instead of 2½ lb. per square inch on the pistons." And (page 106): "Experiment xii. In this case I have assumed an equal evaporation in the same time as in the foregoing experiment; and if $\frac{2}{3}$ths were deducted for waste, the blast pressure would be less than nothing,—or a vacuum; for with the subtraction of $\frac{1}{4}$th for waste, as in the table, the absolute pressure amounts only to 11·10 lb., whilst the resistance required 10 lb. per square inch; and if, contrary to demonstration, it be considered possible that the 77 cubic feet of water were converted into pure steam, and that this quantity passed through the cylinders in the hour, the blast-pressure would equal the whole force required to balance the assigned resistance; for the absolute pressure on the pistons would have amounted to 20·70 lb. per square inch, whilst the sum of ascertained resistances was only 10 lb."

Respecting *Dr. Lardner's* experiments, Mr. Parkes says (page 110), "It appears, from the tenth conclusion, that the author considers his experiments, so far as they have gone, as giving results in very near accordance. It cannot fail to be remarked that the term 'discordance' would seem to be much more appropriate than 'accordance' to the indications of the last column of the table. But no fair average can be struck from such irregular results." And (page 118), "If the resistance assigned by Dr. Lardner as opposed to the motion of the train be correct, the efficiency of the steam in the locomotive is more than double that obtained by the best condensing engines; more than treble that derived from stationary non-condensing engines; and equal to the performance of a Cornish expansive engine doing a 50 million duty with a bushel of coals."

Respecting the experiments of *Mr. Nicholas Wood*, Mr. Parkes says (page 129), "The *North Star* affords a sequence of six experiments, at velocities varying from 18½ to 38½ miles per hour; but the sequence of results is so irregular as to indicate error in two of them, which I have accordingly marked and rejected, for it is certain that a greater measureable effect must accrue from the expenditure of equal power at 25 than at 30, at 31½ than at 34 miles per hour; yet the reverse appears on the face of the experiments. It is equally impossible that a greater momentum should have been generated by a like consumption of force at 34 than at 25 miles per hour."

Respecting *Mr. Edward Woods's* experiments with the *Hecla*, Mr. Parkes says, "On turning to the tables, and examining the results of this experiment (case 2), it will be apparent:

"1. That a duty has been performed of double the amount effected by the condensing engine, with an equal expenditure of power, (column 15).

"2. That the absolute force impressed upon the pistons, as determined by the relative volumes of water and steam, was 30·95 lb. per square inch; whereas the tractive effort, requisite to overcome the assigned resistance, amounted to 39·28 lb. per square inch, exclusive of the force equivalent to the friction of the loaded engine, and blast pressure, (columns 29, 30).

"3. That the power required of the engine to balance the tractive effort alone was 151½ horses; whilst the absolute power furnished by the steam to move the engine, to neutralize the blast resistance, and to overcome the load, amounted only to 119½ horses (columns 33, 34).

"4. That the water expended as steam per horse-power, per hour, was 37·89 lb. for the tractive effort or duty only (column 42); whereas the condensing engine consumes 70 lb. per effective horse-power.

"5. That compared with a fixed non-condensing engine, at equal pressure, the locomotive, though labouring against the heavy counter-pressure of the blast, from which the other is free, is assumed to have performed equal work, with less than one half the expenditure of power.

Such are the incredible results arising out of data purporting to be fairly and necessarily deduced from impeachable experiments."

Therefore we were justified in saying, in our former paper, that it was remarkable that in applying his pretended verifications to all the experiments published on locomotive engines, by different engineers, Mr. Parkes had found that the conditions to which he proposed to subject those experiments were not verified in them, and that such a result ought to have put him on his guard respecting the soundness of his arguments. But, besides, we have proved that Mr. Parkes has used, in all his calculations, velocities which are wrongly averaged and greatly exaggerated; that he has taken no account of the gravity on the different inclinations of the road; that he has neglected the resistance of the air, &c.; that he has calculated erroneously the pressure and volume of the steam in the cylinders; that he has made another error in computing the pressure due to the blast-pipe; that he has tested the experiments by a false principle, grounded upon his confusion of the vaporization for the same distance, with the vaporization in the same time; and we shall see very soon that, in calculating what he calls the *momentum* generated by the engines, he has wrongly considered the whole train raised up in the air by the engine, instead of being dragged or rolled along the rails; *all points established upon the very tables and words of Mr. Parkes*, so that he cannot say that his sentiments have been misrepresented. Consequently we were justified also in adding, that he heaps errors on errors, combining and complicating them unawares, till he arrives at a point where he does not produce a single result that is not erroneous.

8thly. After having shown the material errors and general misreasoning which pervade the whole of the strictures of Mr. Parkes against our researches and those of others, we come to the *critic's* own conception, that is, to the calculation of the mechanical effect of locomotive engines, by what he calls the *momentum* generated. He says (page 128), "Column 2 exhibits the momentum, or product of the mass, in tons, of the engine, tender, and train, multiplied into its velocity in feet per second; and the sums thus represent the respective mechanical effect produced per second by each engine." And (page 130), "Four means are derived from these results. Mean 1 informs us: 1st. That when the velocity is increased in the ratio of 1·52 to 1, an increased consumption of power is required for the production of equal mechanical effects, or of equal momenta, in the ratio of 1·43 to 1, being somewhat less than in the direct ratio of the velocities. 2nd. That power is expended in the ratio of 2·43 to 1, or in about that of the square of the velocities, to produce equal gross commercial results. 3rd. That power is expended in the ratio of 3·11 to 1, or in not much less than that of the cubes of the velocities, to realize equal useful commercial effects."

So, in our former paper, we have properly cited Mr. Parkes, and therefore our conclusion is correct, that what Mr. Parkes calls *momentum* is nothing more or less than the common useful effect (weight of engine included), as explained in every work on that subject, with the exception that, here, it is wrongly calculated; and to be convinced that it is wrongly calculated, it suffices to give a glance at Table xvi., page 143, of Mr. Parkes's paper. There we see that the *Atlas*, in Experiment I., produced a momentum equal to 206·90 tons, gross load of the engine (column 5), multiplied by 14·263 feet per second, mean velocity of the engine per second, (column 9), equal to 2951·01 tons moved one foot per second (column 11). This *momentum*, or *mechanical effect*, reduced to pounds, is equal to 6,610,262lb. moved 1 foot per second, or to 396,615,744 lb. moved 1 foot per minute. Now, if we observe that a horse power is expressed by 33,000 lb. moved 1 foot per minute, we shall see that the momentum produced by the *Atlas*, in that experiment, was equal to $\frac{396615744}{33000} = 12019$ horses.

Experiment II., exhibits a momentum equal to 12,504 horses; Experiment III., a momentum equal to 5862 horses, and so of the others, to the end of the Table. The *North Star* alone produced a momentum, or mechanical effect, equal to 21,668 horses! These extraordinary results proceed from Mr. Parkes taking erroneously the total weight, in tons, for the resistance moved, as if the whole train were *carried up in the air* by the engine; whereas the true resistance overcome, in rolling the train along the rails, is only at the rate of about 6 lb. per ton of weight, besides the gravity, the resistance of the air, &c., overlooked by Mr. Parkes.

Certainly, then, we were quite right to say that calculations like these do not tend to the progress of science, but that they would rather lead it back to its first rudiments. And if we have added, that Mr. Parkes *has not made one single experiment on locomotive engines*, it is a fact that can easily be verified, by looking at his Table xvi., from which he has deduced all his *momenta*. In column 1. of that table, the name of every one of the experimenters is given, and there is not one experiment in the name of Mr. Parkes. So that a man so fertile in strictures against the experiments of others, has not made a single one himself.

I must now say a few words on the letter of Mr. Parkes, inserted in several periodicals (*Literary Gazette*, September 18th; *Mining Journal*, same date; *Civil Engineer and Architect's Journal*, October 1st), in support of his former strictures against my experiments on locomotive engines. It would seem, from that letter, that I have attacked Mr. Parkes; but mere dates will easily settle that point. The attacks of Mr. Parkes against me will be found in his paper *On Steam Boilers and Steam Engines*, inserted in the *Transactions of the Institution of Civil Engineers*, volume iii., with the date, London, 1839, given (page 162) at the end of the paper. In this writing I am attacked, almost without interruption, from page 77 to the end. The alleged inaccuracy of my experiments is presented, under all possible forms, as the necessary consequence of the results obtained by Mr. Parkes in his tables. It was then incumbent upon me to protest against any conclusions drawn from these tables, and to prove that they are, as well as the reasonings of the critic, an uninterrupted series of blunders and mistakes. Therefore I published an answer in the Introduction to the 2nd edition of my *Treatise on Locomotive Engines*, Weale, 1840; and afterwards printed it again, with more details and full references, in the *Civil Engineer and Architect's Journal*, September 1st, 1841; in the *Surveyor, Engineer, and Architect*, same date; and in the *Inventor's Advocate*, August 28th, 1841. These dates, and the whole subject of the paper itself, show sufficiently that it is but an answer to the unfounded strictures of Mr. Parkes.

Now that I have established that, in my refutation of the criticisms of Mr. Parkes, I had not misrepresented his sentiments, it would be very easy for me, and completely justifiable, to add some observations upon the expressions used by Mr. Parkes in his letter, to support by words what he could not support by arguments. But, as it is my decided intention not to enter into any discussion foreign to the scientific question, I shall abstain from presenting any remark on the subject, begging only the persons who want to form a precise judgment of this controversy, to read the letter of Mr. Parkes again, after having perused this paper, and then to

draw their own conclusions. The letter of Mr. Parkes is printed in the *Literary Gazette*, September 18th, 1841, *Mining Journal*, same date, and *Civil Engineer and Architect's Journal*, October 1st, 1841.

G. DE PAMBOUR.

IMPROVEMENTS NEAR THE THAMES ABOVE LONDON.

FAULT has already been found with us in more quarters than one, for having too repeatedly and too much at length made allusion to Dredge's improvement of the suspension bridge; and, as we shall, in the course of this article, have occasion again to advert to the same subject, we shall probably again offend in the same or similar quarters. These *Alouettes*, (howling monkeys) have even gone so far as to accuse us of having received fees or bribes from Mr. Dredge, which shows pretty clearly what they themselves would have done, or been willing to do, had they been in our place. We never received of Mr. Dredge, as far as we recollect, even an advertisement for the cover of our Journal; and if our object had been simply to get money, we should have taken a different course, and proceeded in a different manner. Our grand object is, to the best of our ability, to promote the interest of the public, and to give them the best information we can upon subjects with which they are but too little acquainted; and we are perfectly aware that, in doing this, we have been so far sacrificing our own interest; for, had we made common cause with any party, and assisted them in imposing on the public credulity, we should have had our share of the dishonourable reward. There are, however, abundance of other parties to do such things, and therefore we have persevered, and shall persevere, in our straightforward line of perfect independence. For paying more attention to the improvement by Mr. Dredge than any of our fellow labourers have done, we have both a major reason, and a minor one. The major, is a firm conviction of the great service which this improvement can render to the public, by enabling bridges to be erected, where hitherto there have been none, on account of the want of sufficient funds, or the rapidity of the stream, the difficulty of finding foundations for piers in the current, and the instability of these when erected. The first of these is got the better of by the greater cheapness of the improved bridges, and the second by their susceptibility of being extended across a wide, rapid, and turbulent river, without any support but the land abutments, which can, where necessary, be kept clear of the stream altogether. These advantages have been tested by experience, and the proof of their superiority has been established beyond the probability of question by any candid and competent judge:—this is our major reason.

Our minor reason, is the disposition which has been shown, by small engineers especially, and by but too many of the greater ones, to misrepresent and calumniate this improvement, and set the public against it, thus keeping it in the back ground: these parties do not attack it by argument—do not show weakness, imperfection, or error of principle in it; for in these respects it is invulnerable. They endeavour to make the public dislike it by less honourable and legitimate means—by

> "Sly remarks of beaming faces,
> And annotations of grimaces,"—

which is the way whereby envy attacks, when it does not come forward boldly and openly, and back by reasoning the dislike which it shows—or rather feels, but dares not manfully and directly avow. We assure such parties that, if they, or any of them, would devise an improvement of any thing like equal value to the public, we would speak as often and as heartily in their favour, as we have done in that of Mr. Dredge; and we can positively assure them, that if they offered us money for what is nothing more than the discharge of our duty to the public, we would answer them by "Your money perish with you"—so much for what we have said of Mr. Dredge; and now for the subject of our paper.

The improvements which have been effected in London and its vicinity, more especially within the last five-and-twenty years, are quite unprecedented in this country, or perhaps in any other: their number is almost countless, and their extent includes every diversity, from cutting off an awkward corner in a crowded part of the city, to the constructing of what may be well considered as new, healthy, and elegant cities, in the neighbourhood of the old one, the improvement of which is more stubborn, because more expensive and more opposed by conflicting interests, than those new and splendid additions.

The growth of London during that period to which we allude, somewhat resembles that of the celebrated banyan tree of the East, (*Ficus religiosa*); the various roads which diverge from the old part of the city, as the branches of the Indian fig, have, somewhat like these, put down fibres, which have taken root and grown into new cities, as those take root and grow into new stems, which would be goodly trees if they were apart, but are only portions of the mighty mass as they stand connected: the population of London and its environs is equal to that of a hundred ordinary cities, or a thousand market towns; and the wealth, the splendour, and the comfort, are fairly in proportion. The best of provisions, and of all articles for human use, convenience, comfort, and enjoyment, are to be had at moderate prices; and with due economy, human beings may enjoy equal comfort at a lower price in this mighty metropolis, than in the smallest and most remote hamlet in the land. It is union which gives this—the union of a full million and a half of human beings—the population of a moderately sized kingdom, brought within the limits of a fraction of many country parishes. From this, the grand centre of population, intercourse, and enjoyment, a stimulus goes forth, exciting the energy and the industry of every known country whereof the inhabitants are excitable; and the result is, the return of a large revenue to London, not as a tax imposed, but in commercial profits, and as the price of benefits conferred. We say that it is unity and co-operation which achieve these things, and we know that we are right. It is true that the old limits of supposed unity have been all exceeded, and the population is extending farther and farther beyond them every day. The city within the walls, which constituted the principal part, almost the whole of the metropolis, while England was disturbed by internal feuds, has now become a mere speck in the map, and even the wider range of the bills of mortality has been overstepped. But these nominal bounds of unity have ceased to be anything else than words of course, or, if there is any other distinction between them, it is an antiquated "thing of offence," and quite contrary to the spirit of modern society; for, in spite of these nominal distinctions, and the large extent over which the increased population has spread, and the increasing population is still spreading, the people of London are one people, and though each works or makes his exertions apart for himself, the whole co-operates to one mighty result; and, con-

trary as it may seem to some of the theories, the individual independence is the grand band of the general union, stronger, as well as more agreeable and effective, than if union were enjoined by all the laws, and enforced by all the powers and armies upon earth.

It is not easy to reflect long or generally upon the British metropolis, without being led to such subjects as we have now touched upon; but our more immediate purpose is the increase and improvement of the buildings, which can be seen at a passing glance, and without any reflection. They are in various styles of taste, and in all directions—east, west, north, and south. But it is remarkable that, in the whole of the extensive enumeration, advantage has not in one instance been taken of that which constitutes the grand physical accommodation and beauty of London, and might be rendered its highest ornament—the river Thames.

Amid all the march of improvement, great and rapid as it has been, the Thames has been all but neglected. It is true that a Custom House has been erected, with a front and promenade toward the river, in the eastern part, and the new houses of Parliament are constructing so as to take somewhat obstrusively into it toward the western part of it. It is further true, that more spacious warehouses, and more convenient wharfs and landing places, are spotted along the shore, both on the Middlesex and Surrey side. But although, from the free circulation of air, and the tempering of the summer's heat, and the winter's cold, the banks of the Thames are the most healthy and agreeable places in the metropolis, yet no one conspicuous improvement has been made in human dwellings along them. From one end to the other, they are places of commerce, and so strongly has commerce taken hold of them, that it would not be possible, or even desirable though possible, to remove it from any portion even of moderate extent. Hence, all the grand improvements in the building of habitations have been made at a distance from the river, and indeed out of sight of it; so that, in as far as ornament, health, or accessibility by means of the stream are concerned, the Thames might as well flow on the opposite side of the globe. No doubt it is a great thoroughfare for human beings, as well as a great vehicle of transport for merchandize; but still, as a thoroughfare, though it leads immediately to every place of habitation along both its banks, it leads directly to none of the superior neighbourhoods; and, though all the space around is scored with spots worthy of being the nuclei of cities, yet these are all at a distance from the river, and have very inferior buildings between them and it.

We have hinted that this is mainly owing to the fact of commerce having taken possession of the banks, from the most seaward suburbs, up to Millbank on the London side, and to Nine Elms on the Surrey; and this commerce has taken so decided a position, and so adapted itself to the subsistence of many, and the accommodation of all, that it ought not to be much disturbed; for if the goods which are carried on the river had to be moved in waggons, drays, or carts, along the street, these, which are already sadly encumbered in many places, would be rendered altogether intolerable.

Still, however, it is desirable that, among the many improvements, there should be some spots set apart for genteel habitations at which all the beauty of the river might be enjoyed. Within the present limits of London and Westminster, such spots are, for the reason already stated, not to be had; and then, when we get below London, the immediate banks of the river are, generally speaking, low, marshy, liable to be flooded during rains, and therefore not at all fitted for the purposes of comfortable and genteel habitation; the consequence is, with the exception of a few towns and villages on the rising grounds, chiefly built with reference to the accommodation of shipping, and, therefore, if at all desirable, desirable only as places of temporary resort, the banks of the Thames below London are dingy flats, or beds of reeds and coarse aquatic grasses, with only a hovel or wretched cottage spotted here and there. Therefore, if improvement in genteel habitations and the enjoyment of the Thames, are to be had together, we must seek for them above London and Westminster, and for the convenience of those who resort to the city for office, for profession, for business, or for pleasure, we must seek as near to Westminster as possible.

Now, in as far as the beauty of the river, considered merely as a stream of water, and a low-lying, yet dry, and therefore warm and healthy situation are required, we find the chosen one in the immediate vicinity. From about Vauxhall bridge to nearly a mile upward, Mr. Cubitt has obtained a long building lease of the adjacent ground, with full command of the Middlesex bank of the river; and this expanse of surface is connected with the new streets and squares all the way northward to Knightsbridge and the new entrance to Hyde Park, for the construction of which preparations are now making. It is understood that this will be a finer entrance to the public park than any of the existing ones, and that the unsightly rubbish of buildings which flank it will soon give way to splendid mansions. From this entrance a new and spacious road will be carried right down to the bank of the Thames, as a grand central thoroughfare; and at different points of this, other roads, also of spacious dimensions, will branch off, not at right angles as they invariably do in the old dull monotonous manner, but at various angles, forming as it were the points of stars. This is wholly the planning of Mr. Cubitt, and it is noble and masterly, and will have the most delightful effect, because the eye will not be fatigued by interminable lengths of street, but new forms and new objects will constantly occur, and vying with the others in taste and grandeur, until the bank of the Thames is arrived at, where we understand there is to be a spacious promenade and drive, along which the inhabitants may enjoy the view, the air, and the salubrity of the river. The north bank of the Thames here forms a very agreeable convexity, rendering the bottom cleaner, and the water more pure than in any part near London; and, therefore, if the embankment of the promenade were advanced only a little way beyond the present line of the bank, a clear and pleasant stream would meet the eye at almost every state of the tide, except perhaps during very low spring ebbs; then the subsoil is gravel all the way to the bank of the river, and thus the surface, with a very material degree of surface drainage, would be perfectly dry even in comparatively moist weather. Then there is another advantage; filtered Thames water, as soft as that of the river itself, might be had at the depth of a very few feet, which would answer well for culinary purposes, for the laundry, the stable, and every other place where a supply of water is necessary. The low and sheltered situation, the porous subsoil, and the vicinity of the river, will also render the vacant spots peculiarly advantageous for ornamental plants, while choice exotics, whether suitable for the conservatory, or for being alternately in the moist and the dry stove, would be more healthy, and grow and flower better, than in any other place so near the west end of the metropolis, or indeed so near it in any direction.

This river-side portion of what may be called new or south-west-

ern London, would be every way superior to the vicinity of the Regent's park, even supposing the houses there to be better built, and more tasteful in their aspect than they are now; for the Regent's Park is on the clay, and therefore it is damp, cold, and unhealthy in the winter; and the ornamental water there is a stagnant pool, and not a living stream. Indeed, this will be by far the most healthy as well as the most beautiful of the new neighbourhoods in the vicinity of London; and though the streets and squares on the Knightsbridge side of the King's Road are very healthy, it will in both respects eclipse them; and we have no doubt that it will do the same in the style of its architecture. In those streets and squares there is an improvement upon the best built of those in other places, especially such as are a good deal older; and as the buildings have advanced west and south-west, the style has been improved, and the dull stiffness of a continual succession of right angles and parallel lines has been more and more got rid of. In this portion toward the river, where the great lines of the plan are laid out, but the buildings not yet begun, there appears from the slight inspection we gave it, to be scarcely any right angles or parallel lines; and thus, if the buildings are made suitable to the place, which they no doubt will be, this cannot fail in being among the most unique and elegant assemblages of mansions which have been erected in modern times; while its abutting upon that particular part of the river will give great liveliness and finish to the whole.

There is one very great improvement which will be connected with this new and tasteful locality, and that is, the opening of a spacious street, from about the middle of its length, on the Vauxhall Road, by the most advisable line to Palace Yard. It is a point to be determined whether the landing of this new street should be to the east or west of the Abbey, though perhaps the west would be preferable, only it might occasion a cutting through the enclosed and planted ground to the north of St. Margaret's Church. This might perhaps prove an additional beauty, and not a deformity; and if the street were brought in this way, it would have the advantage of laying open some of the worst neighbourhoods in Westminster. Now, very bad neighbourhoods partake thus far of the nature of deep seated ulcers, that, while unopened, there is no chance of curing them; and if you are to cure you must make an incision broadly through the very worst parts. Westminster may be said to be an ulcer all over, from the Vauxhall Road to the entrance of the Abbey; and the present streets are so unequal and so irregular, that the making of any one of them a decent thoroughfare would be little less costly than the making of a new street, and it would not cure the evil. But if the new street were made, it would render its immediate vicinity well aired, healthy, and valuable; and these advantages would generally extend both to the right and to the left. If a spacious new street is cut through an unequal, confined, and low part of a town, the morals of the neighbouring inhabitants are either improved, or they shift their quarters to other localities. Indeed, it is usually partly the one and partly the other; for if a locality is of considerable extent, there are always a good many within it who would improve themselves were it not for the example around them. In the case of vice, as well as in that of virtue, the majority control the minority, and bring them over to their own side, in spite of any effort to the contrary; this follows from the well-known principle, that mankind learn in the school where they are placed, whatever that school may be; and though the parents may in a great measure resist this corruption of juxta-position, the children are placed in jeopardy from which they can hardly escape. The introduction of one respectable street, containing shops or houses, or shops below and dwellings above, as may be, has a wonderful effect in the purification and curing of a neighbourhood even of the very worst description. There is something in the close vicinity of respectable people, which in a neighbourhood even the most profligate, makes the people put on the semblance of decency, by which they are not unfrequently led to the reality; and perhaps the example of such persons near them, as it operates without direct reproof or interference, acts more readily and effectually than any quantity of parchments and scribblings of law, which, as they are forced upon the parties, always, from the very nature of human beings, produce a sort of repulsion. This, however, though a very pleasant view of the matter, is a little foreign to our intended architectural purpose, only that it shows that the improvement of the people is a natural, and all but a necessary, result of architectural improvement; which is saying as much as can well be said in favour of the practical benefit of any science.

Such a street as we have mentioned would be necessary for the opening up of a pleasant communication between this splendid new part of the town and the houses of Parliament, the Treasury, the Horse Guards, the Admiralty, and all the adjacent places of public resort; and the effecting of it will be imperative as well as convenient and wholesome. Supposing it to be made, Millbank Street might be left to its coal waggons, drays, carts, blocks of stone, beams of timber, and other apparatus and materials of merchandize, and the other streets might be left to such gradual improvement as would be given them by the inhabitants. Thus the value of the new buildings about Ranelagh would be considerably enhanced, and the whole of Westminster would be put in train for repair and improvement, and this by means which would soon repay itself in increased rents, and additional and more profitable business.

When the new buildings alluded to are erected in the style which is anticipated, and of which an earnest has been already given in these erections by the same spirited builder, there is not the least doubt that they will become the congregating spot for the great majority of titled, official, and influential men of the West End of town; and that numbers of such persons, and others of consideration who resort to London during the business season, without bringing their families with them, will endeavour to find lodgings in the streets which connect the groups of mansions; and thus the real West End of London will be removed about a mile farther from the city on the average than it is at present; and yet, with a proper thoroughfare along the Thames, which shall not interfere with the navigation and commerce of that river, the city may be visited in as short a time as it is at present, and far more comfortably, while parties who require frequent consultations will be brought into the same neighbourhood, and at the same time enjoy pure air and a healthful situation, comparatively free from the smoke and dust of town, and altogether from its disturbance and noise.

The new buildings which have already been erected towards Knightsbridge, have considerably lowered the rents in Grosvenor Square, and other places which were once the abodes of the élite and the exclusive; and by the time that the whole of this new plan is completed, Grosvenor Square and the others will have become only second-rate localities. Such is the change that the plans and the labours of one builder of spirit and talent can effect in the fashionable parts of so mighty and influential a mass as the popula-

tion of the British metropolis, which, permanently or seasonably, is the abode of all the most elevated persons in the country, together with numerous foreigners of high rank.

One thing is wanted, however, to render this locality complete and perfect: as it is planned, it occupies but one side of the river; and the other side may be covered with manufactories and tasteless buildings, so as to give the prospect across the river a very unpleasing effect. To prevent this, it would be desirable to extend the improvement to the other side also, where Battersea fields, with a soil and climate certainly not inferior to the London side of the river, afford scope for building almost without end. It is true that there are some rather unpleasant incumbrances upon the ground there, which will always be the case when one party does one thing without any forethought as to what another party may do after them. The terminus of the South-western Railway, together with a large portion of the ground adjoinining the terminus, sadly cuts up a very considerable extent of the river-side ground, while *quoad* the railway itself, it is by no means so well-engineered as they might have been. The saving of money, a comparatively small sum in respect of the whole cost of the railway, no doubt brought the line and the terminus into their present position; but it would have been better had the line been left further inland, and extended further downward, until the terminus had been brought close to the bank. This might easily have been done, by keeping up the embankment so as to lessen the slope, letting the present Battersea fields road pass through a spacious arch, and placing the terminus against the abutment of Vauxhall Bridge; and at the same time making the other cross passages under the line a little more ample and commodious. This could have easily been effected by means of suspension bridges, which, from the smallness of their span, could have been made as firm as rocks under the passing trains, and the thickness of roadway would have been next to nothing, as compared to what it is with the present brick arches. Altogether too,the expense would not have been greater than that now incurred, while a large portion of the surface adjoining the banks of the river would have been left quite free, and there would have been a perfect command of all the fields up to the rise. This was not foreseen, and therefore the railway company executed their work in what appeared to them the cheapest manner, and left those who came afterwards to take care of themselves as they best might. There is another incumbrance of more recent construction than the railway, and that is, the water-works and pond close by the banks of the river. But these are not so inveterate an evil as the railway and its terminus; they could, at least with the removal of the building a little further from the river, be built in and concealed, in the same manner as Mr. Cubitt has done, or is to do, with those distilleries and other works on the opposite side of the river, which he has not the power of removing; or, with a very little advancement into the river, the engine-house belonging to the water-works might be built in, and thus all might be got the better of, saving the narrowing of the rearward part of the field occasioned by the railway; and the reduction of which is unseemly only for a comparatively short distance. Even as matters stand, therefore, the Surrey side would admit of a most substantial improvement, and might be made nearly equal to the London one, and a sort of counterpart of it. Great part of this ground belongs to the duchy of Cornwall, and might be improved out of the revenues of the duchy, only at present the funds are so much drained that the expense could not be borne. It would, perhaps, not be the very best of wisdom to leave the improvement to be executed, or even the plan to be made, by those connected with the public revenue, because the probability is, that their plan would be so different from that of Mr. Cubitt on the opposite bank of the river, that they could not be made to harmonize. But, seeing the danger of this, and the fact that there are no adequate funds, the better plan would be to dispose of the whole in one lease, as, thereby, there might be a similarity between the buildings and decorations of both banks. Hence, by far the best way would be to let this ground on lease, and to Mr. Cubitt if he were so inclined, to point out the places which should, and those which should not be built upon, as this is the only means by which the several portions which are now detached, could be so dealt with so as to bring them together as one whole, all the several parts of which should harmonize well with each other. Mr. Cubitt is the man to whom a lease with such covenants should be granted, as he is the only one who has a control over the land, so as to give similarity to both parts, and union, beauty, and grandeur to the whole. But, in addition to the vast quantity of ground which he has already leased and has not yet built upon, it is a question whether he would take this large portion in addition; but the interest of the public, and perhaps also his own interest, are in favour of his doing so; because the public could not do so well by any other means, and his project is incomplete unless it shall include both sides of the river.

This Surrey bank has been surveyed, or at all events looked at, apparently with some such object as this in view; but whether the looking is to be a *terminus*, or followed out by some plan, is more than we can decide. We have candidly stated what appears to us to be the best mode of disposing of this ground, both for the sake of the improvement, and for benefit to the public; but we have no absolute data for enabling us to know, far less to be certain, that those in office will be guided by the strict propriety and ultimate advantage of the case. Public men have seldom time to study matters of this kind with that minuteness wherewith they require to be studied; and when they have both time and talents for the study, there are often insuperable obstacles in the way, which the secrecy necessary for office prevents them from revealing. Therefore we should judge of the conduct of all such men tenderly, and with a due degree of reservation.

But supposing all the difficulties are overcome, that the survey or view to which we have made allusion was not a mere pleasure jaunt, or an expedition in quest of gudgeons, but the real *bonâ fide* commencement of a something, which something was none other than an embankment of the river, and the laying out of the ground behind, and building on it in a style of art harmonizing with, but not really copied after that of Mr. Cubitt, on the opposite bank—supposing all this, and supposing, farther, that the works are going on under the government itself, or, better, under some lessee competent both in talent and in capital, we put it to any one to say whether such a situation and such a collection of mansions could be found or erected in any other place within the four seas. We have heard it mooted that one part of the ground on the Surrey side of the river was to be a pleasure ground or garden; and we are ready to admit that such an ornament would be far more successful than in any other of the public parks, and that with due watching, and the assistance of the requisite conservatories and stoves, with well-qualified herbalists to attend them, it might be made to contain a collection of the choicest plants of all climates, whether hardy or tender, and become a school of the most useful instruction

at the same time that it would be most gratifying to the senses. Ornamental water might be had in any quantity; by being tidal it might frequently be changed, mud might be prevented from entering along with it, and it might be stocked with exotic plants and fishes, while every bird that could bear the climate, might be placed in invisible cages somewhere within the grounds; and orange and other delightful trees, in high health, and in flower, and fruit, or in both, might be brought to adorn the lawns and glades, and other little openings among the clumps of well-selected shrubs, and the tastefully-formed and judiciously-planted beds of flowers, whilst, by succession, species might, in favourable seasons, be kept in bloom for eight months of the year. Tree and pillar roses, especially the latter, if the sorts were well chosen, might give indescribable beauty to such a place, which would be truly a garden of delight, a garden worthy of the wealth, and gratifying and stimulating to the taste, of this rich and mighty nation. That we have not already such a garden is a shame to us: to have it would have been a honour; and this is the very best situation in which it could be formed, for soil can be had any where at a little cost, and this contains the attribute of climate which no wealth can purchase, though it may do a good deal in the way of improvement, where the ground has been neglected. Supposing, which, however, is merely hypothetical, resting upon nothing but a mooted surmise, and there being no Sir William Hooker, or any other botanist along with the surveyors or viewers of this bank of the river, one thing still would be wanting; the assemblage would not be one whole, but two portions cut asunder by the intervention of the river. This river is in itself one of the principal beauties; and if there were a spacious promenade along a mile of each side, fended off by a tasteful railing, with a terrace of elegantly built and tastefully diversified mansions behind each, the effect of the nature adorned by art would be incalculably fine. We would wish to have and to preserve all this, but something is wanted in addition: the inhabitants and visitors of the whole would like to range over all the drives in their carriages, and over all the walks on foot, without being annoyed by the splash of a steam-boat, or overturned by its near approach, to a thorough soaking of their bodies, if not to the absolute peril of their lives.

How is this to be accomplished, and the same little bower and light and gay appearance of the whole kept up? Not by a lumping stone bridge certainly, for that would make the two parts appear like light panniers suspended across a donkey by a monstrous crooked saddle. A Dredge's suspension bridge, spanning the river with single curve, from graceful towers on the two abutments, is the very thing, and this the very place for it. The bridge itself could be made as strong as would bear many times the weight that would ever be upon it, without the slightest vibration. There might be a double carriage-way, and a double foot-path, to prevent the possibility of collision; the towers and balustrades might be made highly ornamental; and the whole thousand feet might be constructed and put up for somewhere about ten thousand pounds.

INLAID PAVING-TILES.

TO THE EDITOR.

In the latter end of last August I visited Goodrich old castle, on the banks of the Wye, for the purpose of viewing its castellated remains, the architecture of which seems to be of pretty good character. On climbing over the ruins, I was surprised to find, strewed about in different places, particularly in an apartment our guide informed us was the chapel, small pieces of red stones, about nine inches square, and exactly an inch in thickness, very like Roman bricks, on the upper side inlaid with a kind of composition resembling scroll-work, but of very imperfect workmanship. These stones, which I take to be bricks used by the Saxons, our guide told us were pieces of Roman tesselated pavement, which formed part of the chapel floor. This I thought to be of a peculiar kind, not at all resembling the tesselatæ found at Tintern Abbey, and at different times in Gloucester; and neither can they be Roman, as the castle I believe to be not older than the Conquest. Therefore, I am disposed to believe that they are bricks, not altered in size or thickness since the Roman era, laid down to form a paving, and afterwards cut in fancy scroll work, and inlaid with a sort of white composition, according to the taste of the designer; and they appear to have been glazed on the surface. As very small pieces are to be seen, and from the number of visitors, each wishing to obtain a small portion, they have now got very scarce, and in the present state quite unfit for a drawing. Should this merit your approbation, by inserting it in your Journal you will greatly oblige a subscriber,

CHARLES COWMEADOW.

Northgate Street,
Gloucester.

NOTE BY THE CONDUCTOR.

As we are anxious to satisfy every inquiry, as far as our own information goes, or as we can command that of our numerous correspondents, we shall tell Mr. Cowmeadow all that we know about the subject of his inquiry, which we confess is not much.

The materials to which he alludes are tiles, formed and burnt much after the manner of the Romans, that is to say, thin in proportion to their other dimensions, and kiln-burned to a very firm and durable consistency. They appear, in all instances, to be used only for the pavement of churches, and other portions of religious houses; and we conclude that the whole of the fragments scattered about Goodrich Castle, must originally have belonged to the pavement of the chapel, and not to that of any other part of the structure; at least, all that we have seen, which have been a good many, have evidently been used for pavements of this kind, and for such only.

They are certainly not Roman tiles, for the Roman pavements were all tesselated in the superior apartments, and formed and set something like Dutch clinkers in the more common ones and the passages. In the tesselated pavements, the different tesselatæ are of an equal colour throughout, and never scooped or channeled for the reception of any different colour. The common paving tiles, again, are lighter in the colour, and harder in the texture, than the building or roofing tiles, but still they are of uniform colour; and we have never met with such tiles as those mentioned by our correspondent near the remains of any Roman villa, or Roman structure of any kind which we have examined, though fragments of uniformly reddish tiles are very common near such ruins; and bounding tiles of the same colour and texture, but larger in size, occur between the courses of grouted pebbles, in walls well known to be Roman,

and situated where there is no building stone excepting at a great distance.

But, as these tiles or bricks are not Roman, as little are they Saxon. Notwithstanding that the name is applied to arches, and to a variety of buildings, it is very doubtful whether one, if there is one, remain of Saxon building in the whole island. Nay, it is even doubtful whether they made urns for containing the ashes or other remains of their dead. We hear a good deal of short circular columns, with bases and capitals bearing some resemblance to the classical ones of antiquity, and also of circular-headed doors and windows, with zig-zag, filleted, and other mouldings in early use, as being Saxon; but in every case in which we have been able to trace any thing like an authentic history, we found them to be Norman, though Norman of a very early date. In like manner, we have never found the tiles under consideration except in Norman structures, or perhaps in posterior structures, to which they have been transferred from Norman ones. The figures upon these tiles have been scooped out to some depth, and the channels filled up by an admixture of clay and chalk or lime, which gives a white colour; and this and the body of the tile burn very nearly to the same consistency. We are not aware that we ever saw a floor of these tiles as it was originally laid down, though we have met with pavements covering a whole floor, especially in some of the chapels and small old churches in the south of England. In the neighbourhood of Winchester they are very common, and have probably been removed on the demolition of the religious houses, with which that ancient but now sadly decayed city once abounded. In the chancel of the chapel of St. Cross, and in the church of Chilcombe, they are very numerous and perfect; and the fact that they have been trodden on for centuries, and are now not so much worn as the flat monumental stones which are against them, is proof of the excellence both of the materials and the manufacture. Some are darker in their principal colour, and some lighter, and there are vitrified specks here and there, produced by the mixture of lime and silex, or perhaps by salt which was occasionally dropped upon them; but they have not, as our correspondent supposes, been covered over with any glaze. The white inlaid matter in some of them forms a rude pattern. Upon others there are portions of borders and corner pieces, and some have inscriptions in the old church character, tolerably well executed; and such as we have met with have been all in the English language, which would lead to the supposition, that if Norman, they are not of very early date. One figure which a little stretch of fancy might make to pass for a rude representation of the lion of St. Mark, might give the idea that they were originally manufactured in the Venetian territory; but there is nothing but conjecture to bear out such an hypothesis, except it be that, during those times, Venice was one of the chief seats of the manufacture. The English inscriptions are no argument against this hypothesis; because, if the tiles were made to order there, the inscriptions might be in any language which was ordered, just as we find English inscriptions upon the glazed Dutch tiles of more recent manufacture; and also upon porcelain articles which are undoubtedly of Chinese manufacture. The fact is, that the original country of these paving tiles has never been very clearly made out, neither have they engaged very much attention by the students of antiquity. They may have originally been Venetian, and the manufacture may have been imported thence into Belgium, which was to some extent the successor of Venice; but it is very doubtful whether the manufacture was ever established in Britain. The Roman bricks and tiles are well known; and the sepulchral ones of more ancient date are very rude, except in some instances where they appear to have been brought from some country where the people were more advanced in the arts; and it is not unworthy of remark, that among those more elegantly shaped, better made, and more finely finished urns, and other utensils which have been dug up in the barrows, some are inlaid with a white substance the same as the paving tiles, but in more delicate lines, and far better workmanship; but we never found any inscriptions upon these urns or utensils which could lead either to the people by whom they were manufactured, or who ordered them. This is a subject, however, well worthy of the study of those who wish to trace the progressive history of nations. Great assistance, with regard to the more enlightened people and periods, has been obtained from the study of coins and medals, and there is no doubt that a similar history, though not so clearly satisfactory, might be derived from the fragments of bricks, tiles, and pottery; and though these could not be expected to throw so much or such clear light upon former exploits as the coins or medals, they are much more connected with architecture and with domestic accommodation; and, therefore, rightly considered, the study of them might perhaps be really more useful than that of the others. Common history is exclusively devoted to the characters and conduct of men conspicuous in their day, and to the wars, subjugation, and overthrow of one set of tribes and nations, and the establishment of others in their stead; and all such matters are clearly, or at least, broadly set forth, and the men of renown are lauded as heroes, and treated in history as if they had been all the world, while the state of the great body of the people, and their accommodations and comforts, are wholly overlooked. In this respect, history puts one very much in mind of the despatches in which the returns of casualties are made after a battle. The officers of rank are particularly specified, and eulogies in short expressions are sometimes added; but the soldiers who bear the real brunt of battle, are slurred over in a number as so many "rank and file."

We have little room and less leisure to devote to investigations of this kind, but we are quite aware of their usefulness, and therefore we shall feel obliged to any one who can communicate information, to which we ourselves shall always pay attention, or procure the attention of some of our correspondents; and even if our statements are many, they will bring the subject before the public.

HARBOURS OF REFUGE ON THE SOUTH-EAST COAST.

No one having the least acquaintance with the shores of Britain, the set of the currents, and the direction of the prevailing winds along those shores, and with the importance of navigation, not only to the enrichment of the country, but to the very existence of its numerous population, which is out of all proportion to what the country would produce, were it not for the stimulus given by our foreign trade, which entices our industry by the productions of every land and every sea under the canopy of heaven; no one who is in the least acquainted with these facts, can be insensible to the advantages of harbours of refuge, in which the mariner may find shelter and security, when he is so caught in a tempest as that he can neither reach an ordinary trade-harbour, nor keep his vessel out at

sea; but must evidently be driven on shore, to the great deterioration or total loss of the vessel, with jeopardy or loss of life to all on board.

The possession of such harbours at all parts of the coast, where numerous ships pass, and both weather and shore are dangerous, and where there is no trade-harbour, or inducement or means to construct one, is an indispensable requisite, if justice is to be done to our foreign merchants and colonies, and due regard paid to the safety of our ships and lives of our seamen. All will admit the truth of this, and therefore it requires neither argument nor illustration.

But, the question arises, at whose expense are these harbours of refuge to be constructed? By hypothesis, there is no local inducement where such a harbour is most wanted; for, in most parts of the country, harbours have been made for the accommodation of previously existing towns, and not towns for harbours, or in the situations best adapted for them. It is true that, when a town has a superior harbour, either naturally or artificially, that town becomes populous and thriving from this circumstance, to a greater degree, perhaps, than it would do from any other. Upon the same principle, a harbour of refuge might, and almost to a certainty would, attract a population, who would, in time, form a town, and establish a trade; and thus, that which was first constructed for a harbour of refuge, would, in time, serve the double purpose of being a harbour of trade also. The population and trade thus attracted by the harbour, would very soon operate an improvement of the adjoining district; and thus that, of which the sole original intention would be the safety of shipping, would soon be the means of adding to the productiveness and wealth of the country. Still, this does not answer the question as to who is to bear the original expense. By the future town, it cannot possibly be borne; because, by hypothesis, the harbour is to be the cause of the town, and, therefore, the whole expense must be incurred long before the town can be supposed to exist. The proprietor or proprietors of the adjoining lands could not be supposed to originate and complete such a work; for, in the first place, they would not be able, or, in the second place, though they were able, they would have no inducement. The same will be the case with the district, the hundred, the county, or any other local party or interest that can be named. Then, as a joint-stock company, such a speculation would not be entertained; for, though joint-stock companies have sometimes been formed on imaginary profits, and speedily ended in total losses, except to the projectors and their underlings, no one would take shares in a company that would absolutely return no profits, and with this fact so palpable as it is in the case of a harbour of refuge. Even they, for whose more immediate benefit the harbour was to be constructed, in most cases could not, and in every case would not, pay the expense; for, though ships belonging to many owners might be saved by such a harbour, those owners could not, even if able, combine to bear the cost.

The inability or unwillingness of the parties named, or of any other section of the people that could be named, to undertake the constructing of these most necessary and most valuable works, very naturally and clearly leads us to the quarter from which the cost can and should come. The immediate loss, when shipwreck occurs from want of such harbours, falls upon the ship-owners and the crew. The crew can have no relief, as they are gone beyond the application of human aid; but the owners have their relief against the insurers, or, if they do not insure, they become their own insurers, and must abide the result of their venture. But though, in the case of a safe and successful voyage, the ship-owners and freighters have the profit in the first instance, yet that profit gradually disperses itself over the country, in the way of stimulus, if not in that of money; and the stimulus is the more valuable of the two, as being the incentive to the getting of money. In like manner, though, in cases of loss, that loss falls at first on the parties concerned, it diffuses itself in its effect over the whole population. The conclusion is inevitable: the country ought to erect these harbours of refuge out of its general funds, which are levied in terms of acts of Parliament, and disbursed by the executive government, under sanction of the same authority. In the case of public accommodations, it is the duty of the legislature and the executive to find out what ought to be done, and how to do it in the best and least expensive manner. They no doubt get their original hints from private or local parties, and usually far more of these than are wanted, or deserve to be entertained. But those hints and proposals should be thoroughly sifted, in order to find out, and separate, all matters of a private and personal nature, which may be lurking concealed in them as they are suggested. We have been informed, that those harbours of refuge alluded to in the title of this paper, have been used by more than one candidate as a claptrap for catching votes for getting him into Parliament. This, however, is an ill prostitution, and ought not to be tolerated. But the best House of Commons that could be formed would not be able to control what went on out of doors, unless it were in contravention of a previous statute; and no statute could be so formed as to meet the case under consideration, and perhaps it would not be well if it could. Therefore, a thorough knowledge of all the circumstances and doings of the cases, by the members of the legislature and the ministry, is the only means of getting public works duly planned and executed. Numerous instances have occurred, in which those works, projected to or by the legislature, and paid for out of the public money, have been ruinously expensive, or little better than failures. Out of many, we may mention Ramsgate harbour and the Menai bridge, as costly far beyond their usefulness, and the Caledonian canal, as adding partial and imperfect execution, and nearly absolute uselessness, to an expense which would have completed all the most essential harbours of refuge which the country requires. Those, we are bound to believe, are errors of ignorance; but, as they cannot now be corrected, they should be made to serve as beacons to warn from the road of danger—so true is it in all cases, that "the people," and also their representatives, "are destroyed through *lack of knowledge*."

The plan to be adopted, is, to employ surveyors, engineers, or such other professional men as may be required. These must be thoroughly acquainted with the nature and use of the intended work; and none of them should have the slightest ground for believing that he is afterwards to be employed in the planning and execution of it. He should be paid for his report according to its value; but it is distinctly to be understood that his bargain extends no farther than this. If plans and estimates are required, in order to make the subject more easily understood, these also should be paid for, but not estimated by the reporter. It is to be understood that this information is for the instruction of Parliament, and for that only; and thus the plans should be printed and circulated among the members, and the ministry, if it is to be a government work; but it is to be understood that this preliminary reporting is not for the information of the public. If all this is properly done, the members will be prepared for discussing the subject when it comes before the House;

as well as for learning and deciding, in its favour or against it, as the case may be. Had this been always done, much time and expense would have been saved to the public, many members of Parliament would have been spared the humiliating exposure of making speeches on subjects that they did not understand, and so many public works would not have stood as their own monuments only as are now to be met with within the four seas. This being done, a bill, in each case where necessary, would have been brought in, and judged of by those who understood the subject, and could not be swayed by the glozing speeches of interested parties; and the case of works paid for by the state, would, by this means, have been prevented from degenerating into a party or a personal job.

It is time, however, that we were proceeding to consider the necessity of a harbour of refuge on the south-east coast of England, the most appropriate place for such a harbour, and the best and cheapest means of constructing it. This cannot be done as a mere episode in a short paper; but we may perhaps be able, in a satisfactory manner, to illustrate a few points of the outline: the English Channel unquestionably is, in respect of foreign trade, the most important of the narrow seas in and about the British Islands. It is the only passage by sea between London and the south; and the south diverges eastward along the Mediterranean and Black Sea, nor is the Red Sea at any considerable distance from the Mediterranean shores. It extends southward to the Cape of Good Hope, and then northward and eastward as far as New Zealand, the Oriental Islands, and through the whole length of its course it has access to the proximate shores, and also to the opposite and more distant ones. Westward, again, the Channel has access to the whole eastern coast of America, from the north polar ice to the south polar ice, including the West India Islands. Thus the Channel, as being part of all these navigations, and connecting them with the port of London, is the most valuable marine thoroughfare on the surface of the globe. London is the grand cause of this importance, not because it is the political metropolis of the United Kingdom, but because it is the grand centre and emporium of the most extensive commerce that is, or ever was, carried on upon the face of the globe. Some of the outports, Liverpool for instance, have extensive foreign commerce; but carrying to and from the adjacent manufactories is the staple trade of Liverpool. London, on the other hand, has no staple: it is great in every thing, and its greatness, as a whole, is the astonishment of every foreigner who visits its docks, warehouses, and shops. The passage between London and the rest of the world, is therefore the most important that can be named; and danger in any part of it is more serious than danger anywhere else. The very dangerous portion of this navigation, is that from the Isle of Wight, eastward and northward, till the Goodwin Sands are cleared; and of this perilous channel there is a large extent in which there may be said to be no refuge for a ship if caught in a storm that is driven along by an adverse wind. At the terminations of this dangerous portion, there are anchorages—Spithead with St. Helen's, at the western extremity, and the Downs at the north-eastern, with Dover bay a little to the south. The Downs are at the meeting of the northern and southern tides, and therefore subject to turbulent water; and Dover Bay is a very inferior anchorage. St. Helen's lies in the eddy formed eastward of the Isle of Wight; and Spithead is one of the best anchorages in Europe. The very dangerous part of the Channel coast is that between near Selsea Bill on the west, and near Dover on the east; and along the whole of this line there is scarcely a harbour that will afford safe shelter to the smallest coasting vessel during a violent storm. There are also but few places at which it is practicable to make a harbour, though, for refuge in danger, such a harbour would be more valuable here than one on any other part of the British coasts. The causes of the danger, and consequent necessity for a harbour, are to be found in the general set of the wind, and direction of the tidal wave, and of the shingle drift. The general wind blows from the south-west, and often with great violence, as there is no intervening land to break its force between the Atlantic and continental Europe. Therefore, to all ships sailing down Channel, this is a very contrary wind, against which they have to beat, board and board; and unless they keep plenty of sea-room, it is extremely difficult to avoid running ashore. Even to vessels sailing up Channel, to which the south-west is a fair wind, there is still some danger of getting on the beach and being wrecked, the cause of which is the particular motion of the tidal wave in this part of the Channel. The general motion of that wave, or at all events of the current, is eastward to the Strait of Dover, and thence along the shore of the continent, until it is extinguished by the north tide off the coast of Scotland. The north tide keeps it away from the British coast, as far as about the Downs, and the Goodwin and other banks are formed in the eddy or slack water between them. The Channel tide is not a regular undulation, the height and hollow of which succeed each other regularly up Channel; but in some parts the wave is gathered up from, and alternately flows to, the British coast; and it does this more directly along the dangerous portion alluded to, than it does anywhere else. Both states of tide have a tendency to bring ships ashore here; for when the tide ebbs from the shore, there is an inclined plane sloping toward the beach, and though the slope is inconsiderable, it is sufficient to give a vessel a tendency shoreward. Then, while the tide is rising on the shore, there is a current toward that which also tends to bring a ship to the beach. Therefore, at all times of tide, there is a cause altogether independent of the wind, which inclines ships toward this dangerous part of the coast, unless they are in full sail; and if the wind blows a storm, and the ship becomes unmanageable, it is scarcely possible to avoid running ashore; and were an unmanageable ship to remain in this water during a violent storm, it would be in great danger of foundering: such, in fact, are the leading dangers of this part of the Channel. But, notwithstanding their being of the most serious character, there is no harbour of safety to which a vessel can run when unable to keep the sea. The anchorages eastward and westward are too far off, and would be reached with difficulty, even though the ship were at more than mid-channel toward the French coast, especially if crippled or unmanageable. But there is not only no harbour along this line, but there is also extreme difficulty in making one. The ground is unfavourable in itself; it shoals toward its margin; and besides these, there is another cause of difficulty, which has hitherto been proof against the ingenuity and labour of man. There is a drift of shingle continually passing eastwards, sometimes close in shore, and sometimes farther to seaward, but wherever it is, it moves onward, and its progress cannot be arrested by human art. The original source of this shingle is not known; and probably it may lie at the Land's End, or even without it. It first appears in vast quantities in Chesil Bank, westward of the Bill of Portland, where it forms a vast mound with a lagoon on the land side; and in violent south-west winds, vessels are sometimes driven across the bank into this lagoon. From the Bill of Portland,

eastward, little or no shingle appears in-shore; but there is a large accumulation about the Needles, which is continually shifting, but does not enter the Solent, except a little way about Hurst Castle. At the back of the Isle of Wight, it is kept out at sea until Selsea Bill is arrived at; and thus, with the exception of a little shingle about Portsmouth, the banks in the channels between the Isle of Wight and the main land, are soft sludgy deposits, which would do little harm to a vessel, even though it should get aground. From Selsea Bill to near Dover, the drift is along shore, and forms, except at one particular point, a shingle bar, which prevents the formation of anything but high-water harbours; and though these were of the best description,—and they are of the very worst,—they would not answer for harbours of refuge. Besides this, they would be very soon so much drifted up by the shingle, that they would be rendered altogether useless, except for fishing boats and steamers drawing very little water. There is one exception to this, which we shall mention afterwards. Along the projecting cliffs to the westward of Dover, the drift keeps to seaward, and very little shingle accumulates on the beach; but after turning Shakespeare Cliff, the eddy toward Dover and its bay causes a vast accumulation, though it is probable that part of the drift is caried to the Goodwin, and mixes with the silt there. Just off the entrance of Dover harbour, the drift is very great, and forms a bar which artificial means have hitherto failed in removing or controlling. Groins have been extended a good way out, many other contrivances have been adopted, and large sums of money have been expended, but all to very little purpose. The discharge of sluices when the tide is low, causes a temporary gap in the bar; but as the drift is constant, and the cause powerful, the chance is, that the gap is filled up again by the next action of high water. It is difficult under any circumstances to clear away a shingle bar by sluice water; and here the constant reproduction of the bar by the arrival of fresh gravel, cannot be prevented, unless the sluice were as constant as the current, and more powerful.

Owing to these circumstances, it does not appear practicable to make Dover Harbour anything but a resort for steamers, and other light craft. But Dover as a harbour, is, as it were, hallowed by time; is under the immediate influence of the Governor of Dover Castle, who is generally a man of power and influence; and therefore the authorities and inhabitants of Dover are always flattering themselves with the idea that art could procure them an excellent harbour, and therefore they propose that the harbour of refuge should be at Dover. If this were practicable, it would have a good many advantages, such as local supplies of stores, the railway to London, and other circumstances; but it is improbable, and we fear impossible, ever to obtain a harbour there, fit for being one of refuge. Foreness, near the South Foreland, has been suggested, and it is certainly much more free from the shingle drift than Dover; but a vessel which has got that length might as well move to the Downs at once. In the situations of greatest peril, vessels could never get so far as even Dover; or, if they could make Dover, they might perhaps make Spithead in the other direction, within which the narrow seas are a harbour of refuge all over.

In one of the numbers of our first volume, we presented a very brief view of the whole coast of Kent, but it appears that the erroneous opinions respecting certain parts of it have as many lives as a cat; however, though this be the case, our readers must not be alarmed, for we do not intend to discuss the subject nine times over; but merely insert a reply to the report drawn up by authority, and this reply we append to the present article. There is another reason: we had cause to expect, from a gentleman long resident on the spot, and intimately acquainted with all the circumstances from personal observation, full particulars of the only spot where a harbour of refuge could be constructed, which happens also to be the one where it would be most accessible. This is to the eastward, or under the lee, of Beachy Head, where there appears to be no danger of shingle drift, and there is deep water near the beach, so that a low-water harbour, which would answer all the purposes of a harbour of refuge, could be formed at no great expense; and dry docks and other means for repairing vessels might also be constructed. It is true that, at present, the neighbourhood is a wilderness, without tree or shrub, and with very little vegetation of any kind; and if there is an inhabitant, it is a solitary shepherd, whose flock appears as if the pasture were eating them, and not they the pasture. If, however, a harbour were constructed, population would collect, the ground would be improved, and industry would be carried on; and as ships would resort to the harbour for refuge, so also would they do for trade, after a population had been collected. The place is near the rich part of the Weald, which is at present greatly in want of a near and ready communication with the sea, for the import of such commodities as are wanted, and the export of such as are to spare. A branch railway would also open up a ready communication with London; and the construction of the harbour would lead to a great improvement of the adjoining district. We shall again advert to this portion of the subject, as soon as the gentleman to whom we alluded puts us in possession of the data.

Remarks by Mr. Inglis on the Commissioners' Report.

The report, which was ordered by the House of Commons to be printed 5th of June, 1840, first treats of high-water harbours. It commences by observing that, between Selsea Bill and Sheerness, there is no high-water harbour capable of conversion into a low-water one with *six* feet of water at all times of tide, but concludes by remarking that Littlehampton harbour, near Arundel, has within its bar, not only *thirteen* feet of low-water, but for a distance of six miles. No wonder, then, that no remedy is assigned for the bar of Littlehampton harbour, which might be removed by a groin pier, and at a moderate expense. On the contrary, the report proceeds to add of bar harbours, that the new sluices at Dover harbour "generally" remove its bar, but do not take it away "altogether." Sluices, accordingly, are not divided into flood as well as ebb, and for the apparent reason that the report will not know what a flood sluice means. Let it be shortly explained, that an ebb sluice should be placed in front of a harbour's unnavigable mouth, but a flood sluice at the back of its navigable mouth; wherefore, the two remedies against bar harbours are, groin-piers for arresting the travel of shingle coastwise, and flood sluices for preventing a harbour's silt from lodging between its piers or within its basin.

The report next treats of the sites of the projected low-water harbours. It advises such harbours to be made at Langley Point, near Beachy Head, at Dover Bay, and at Foreness, near Margate.

It may here be premised that, in the English Channel, the predominant wind is the south-west, as well as that Capes Grinez and Blancnez, between Boulogne and Calais, are not only the nearest points of land between France and England, but the fittest places, on this part of the French coast, for a low-water harbour to be made by France.

Now Dover Bay is leeward from Cape Grinez during the south-west wind, and, instead of commanding that cape, would be commanded by it.

Foreness, near Margate, is of course still farther leeward, and therefore more unfit than is Dover Bay.

As to Langley Point, near Beachy Head, this point, though windward from Cape Grinez, is sixty miles from that cape, and consequently is much too far off the French coast for purposes of defence against it.

It results that Dungeness Point, between Rye and Romney, may be the defensive site for a low-water harbour; for such point is not only westward of Cape Grinez during the predominant wind from the south-west, but is not more than six to seven miles farther from that cape than is Dover

Bay. In fact, during the time of the Napoleon flotilla, Sir Edward Owen had his rendezvous off Dungeness, and not off Dover. This admiral's sole complaint is the want of a low-water harbour at Dungeness, for repairing ships of war on the spot, instead of being obliged to send them all the way to Sheerness for repairs. In other words, Dungeness, which has deep water, is a preferable place for a low-water harbour for Her Majesty's navy, but Dover Bay, whose water is comparatively shallow, may be a proper place for a low-water harbour for Her Majesty's post-office steam-packets, and which kind of harbour they ought to have without delay. It has been said "may be;" since, but for the railroad now making from London to Dover, a better spot might be at St. Margaret's Bay, near the east point of the South Foreland, or point intimately connected with the Downs and its convoys, as well as with Cape Blancnez and Calais.

Nor is this all. Dungeness low-water harbour, if made by a very long pier dividing Rye Bay through its centre, and so placed in a south-south-east direction, would hold the whole British navy; whereas, on being made by a break-water, extending from Dungeness Point, also in a south-south-east direction, the low-water harbour must not only be limited in size, but will become inland, as well as probably more expensive than a foreland one, gaining land from the shallows, and eventually reducing the harbour's prime cost.

The report, for its part, objects to shingle at Dungeness, but not at Dover, and apparently from motives of patronage. "The harbour" of Dover "is managed by commissioners, of whom" his Grace "the" Duke of Wellington, as "Lord Warden" of Dover Castle, "is chairman *ex officio*." Nevertheless, the report forgets that, by having substitnted low-water harbours for high-water ones, it designed to have neither bar nor sluice. The low-water harbour, projected at Margate by the late Mr. Rennie, cannot be scoured by sluices; and yet the report adds, that "no scouring power" would be able to keep open a low-water harbour projected at Dungeness, and meaning that a sluice would of course clear away the bar of a low-water harbour projected at Dover only. If, moreover, Dungeness, with deep low-water at its point, shall have a bad bar of shingle, then will Dover Bay, with shallow low water throughout, have a worse bar of it. Fortunately, however, the shingle at Dungeness has, as yet, had nothing to do with bar-harbour makers. It may be said to proceed entirely from the encroachments on the sea made by landowners. The report proves such fact by dates, saying that the site of old Dungeness lighthouse, which in 1792 was close to the sea, is now 640 yards from it. In like manner, the shingle, which once was under Dover Castle, is now thrust before the harbour's pent, dock, and basin. The recent evidence of Capt. Jones, R. E., confirms this statement.

The report treats, thirdly, of the mode of executing the low-water harbours, yet without explaining what it means by *deep* water harbours in the *shallow* parts of bays.

Firstly, Langley Point breakwater is advised to be made like that of Plymouth Sound, which breakwater has no connection with the shore, and, in respect of docks and storehouses, is therefore inferior in principle to Cherbourg breakwater. On the other hand, Langley Point breakwater is not superior in principle to all others; since its basin wants a low-water ship-canal for docking ships and warehousing their goods at all times of tide.

Secondly, Dover Bay pier harbour is recommended to have its west mouth, not only opposite the mouth of Dover harbour, but almost touching this harbour's mouth; for which reason the mouth of Dover harbour will, during south-easterly winds, become as inaccessible at low water, as it hitherto is at high water. In short, the surfs of Madras will be brought to England.

It may here be noticed incidentally, that Dover Bay breakwater, meaning the front pier of the new harbour, is to be made first, but its mouths afterwards, or notwithstanding that breakwaters have self-made mouths. Hence it may be inferred, that the new harbour is not only to be left unfinished when begun, but will be insular, and not peninsular, or accessible from the shore.

Thirdly, Foreness low-water harbour's mouth is said to be protected by Margate Sand, instead of being obstructed by that sandbank. Moreover, ships are to sail into this harbour with a wind off shore, and out of it with a wind on shore; whence it follows that the report may have been drawn by a commercial engineer, but cannot have been penned by a naval one. In like manner, Ramsgate royal harbour is said to have "no natural back-water," notwithstanding that the river Stour washes its wall next Pegwell Bay.

The fourth and last part of the report should have treated of floating breakwaters, since it acknowledges the receipt of Mr. Jeffery's Capt. Kaye's plan.

Capt. Kaye, of Woolwich, made a model of a floating breakwater, and gave the model to Mr. Jeffrey. It consists of a cylinder, with a triangular pier on its alleged top. Mr. Jeffery, when advised to convert the pier into a keel for mooring the breakwater, adopted the suggestion as he had done the model, namely, without owning the inventor.

The next floating breakwater may be said to be that of Mr. White. This architect's breakwater resembles a hurdle laid flat on the water, and was tried by him at Dover for nearly a twelvemonth. Mr. White adds that his breakwater answered very well for a trial essay, but confesses that it was drawn under water by the weight of the mooring-chains. When advised to link his hurdles together, and obtain a larger surface for supporting the weight of the mooring-chains, as well as for disentangling them, which he also required, his answer was, that iron rivets would not hold wooden frames, and that he considered his scheme as perfect, that is, as of divine origin.

The last floating breakwater, recently laid before the public, is that of Captain Taylor, of the royal navy, as by Capt. Kaye, of Woolwich. Capt. Taylor's breakwater is like a ship in skeleton, or with ribs without planks, and is said by him to be on trial at Falmouth, and, by the newspapers, as about to be tried off the chain-pier at Brighton. The defect of Capt. Taylor's breakwater may be pronounced as being common to all floating breakwaters, and is that of offering no point-blank resistance to the sea. Until, then, this essential requisite shall have been ascertained practically, and to which there may be added that of having a known gauge for the height of waves during storms, it becomes somewhat useless to proceed and discuss the minute particulars of floating breakwaters. One thing, however, ought not to be passed over in silence; namely, where Mr. White says that his floating breakwater did positively stem the waves at Dover, even when drawn under water by the weight of the mooring-chains, and so becoming hid from sight.

Finally, none of the plans for breakwaters, whether fixed or floating, have required them to be breakwinds as well as breakwaters. A fixed breakwater should be like cliffs sloping from opposite shores, that is, low seaward, but high landward; and a floating breakwater should resemble a ship at anchor, whose broadside was breaking the waves, whilst its masts, yards, and rigging, were baffling the wind.

To recapitulate. The theory of breakwaters, especially of floating ones, may be pronounced imperfect; but to the substitution of low-water harbours for high-water ones, there seems to be no tangible objection. Science cannot decry low-water harbours, and ignorance knows them not. May, then, high-water harbours remain set aside, not only once, but for ever!

LONDON WINDOWS.

——"Windowed well its head;
A heart of feathers, and a brain of lead."

When the porter asked the pedantic Dr. Dunbar how he was to dispose of the peck of coals which the Doctor had purchased to calorificise his shins, on a cold wintry night, in his cob-webbed chamber, Mareschal College, Aberdeen, and the learned Doctor replied, "Cut the area at right angles, knock at the foras, ascend the gradus, and discharge the carbon into the pyx, beneath the fenestra of my cubiculum," the porter, staring in wide-mouthed wonder, inquired, "What is a fenestra, Sir?" "A fenestra! why, a fenestra is an orifice cut out of an edifice for the purposes of observation." The porter was not greatly illuminated by the erudition of the Doctor, though, substantially, that learned person was in the right.

If Dr. Dunbar's definition of the purpose of a window be true,—and nobody will deny that it ought to be so,—then London should be the most illuminated city on the face of the earth; and if, as the skull-men and physiologists contend, physical cavities be the types insignia of intellectual ones, London must be transcendant in mental acumen and in wisdom above all other places. With the intellectual part of the matter we have nothing to do, but we shall take the liberty of saying a few words about the architectural effect and the domestic comfort of dwelling-houses, windowed according to the London fashion. A few of the older ones, and they are but

very few, have the windows scanty in number, and insignificant in size, quite disproportioned to the heavy lump of dead brick wall in which these pigmy fenestræ are perforated, like martin's nests in a bank, or worm holes in an old beam of timber. These, however, have long been out of date, and are now all but out of existence; and a style the very opposite has been introduced, and is with few exceptions continued. Notwithstanding the garnish wherewith these windows are interspersed, and which conspires with them in rendering the fronts of the houses anything but tasteful, if one walks along most of the streets, whether more devoted to business or to private dwellings, one finds the windows so crowded, that they not only destroy all congruity, but give an idea of extreme feebleness. If, for instance, the fronts are only ten or twelve feet square, each must have two staring windows; if a few feet larger, each must have three; increasing the number with the length of the apartment, but retaining the same tame character in all the openings. In very many instances, the windows altogether occupy more length than the piers by which they are separated, and this is continued from house to house in uniform dulness, so that the whole wall looks like a lattice-work, made solely to receive the windows, and at variance with everything else. In many instances, the piers are only two bricks wide, or about eighteen inches from window to window, which gives an expression of extreme feebleness to the whole, and one is afraid to walk too near the houses, lest the ruins should tumble about one's ears. The same number is carried up through all the stories, and the only difference is, that the height is lessened in the upper floors, as if to point out how high the ceiling is upon each floor. The windows on the first floor, which ought to be the most tasteful in shape, because the best apartments are usually on this floor, are distended beyond all consistency, for what with running them down to the floor, and up to the ceiling, they become oblong slits, of which the length and breadth bear no reasonable proportion. One and all, the breadth is much too small for the height, until the upper floors are arrived at; and if there should be a row which are anything reasonably proportionate, they are altogether insignificant. One in breadth by the square root of 2 in height, are the genuine proportions for rectangular windows, but there is not one of a thousand in London which has these proportions: even when the street consists wholly of dwelling-houses, and the plan, if plan it can be called, is not interrupted, but continues from the ground to the eaves, the effect is as bad as can be. If the house shows a large front, the number of windows leads one to suppose that the interior is wholly made up of pigeon holes, and that there is not in it one apartment of tolerable size. If it is a business street, especially one of the better sort, where there are several floors above the shops, the effect is rendered still more and more ludicrous. Modern shop fronts are wholly made up of windows; if there are piers between these windows and the door, they are reduced to the size of small and feeble wooden posts; and as it is the fashion to support a great beam under the first floor upon small cast-iron pillars, which are in general concealed by the way in which the wares in the shop are distributed, the house above, which is often a large one, appears to hang in mid air, like the coffin of Mahomet, without any physical support. Nothing can be in worse keeping, in short, than those houses which have shops on the entrance floor, and the dwellings where there are no shops are not much better.

In the detached villas about the metropolis, there is in general no such outrageous accumulations of windows; but even there they are still too many and inelegant, so that each comes under the category of an "orifice cut out of an edifice." Even in the modern rows, in the precincts of the metropolis, which are all expensive in their building, and still more in their rent and taxes, there is the same excess of windows as to number, and the same meanness in them individually. Of these, a good many are surrounded by a sort of architraves, but these are as poor as the windows which they surround, and the whole looks like a tawdry picture in a tasteless frame. Over these, again, there are not unfrequently pediments, with cornices and friezes under them, the style of which has nothing to do with that of the rest of the front. The frieze is sometimes of circular contour, and looks like the middle cut of a pangolin split in two and stuck upon the wall. The pediments again are sometimes triangles, and sometimes segments of circles, but in both cases they bear more resemblance to the signs of hat-makers' shops, than to anything architectural, whether of grace or deformity. They are supplemental things—things merely stuck on, without any connection with the houses which they encumber, and therefore they have no more of ornament in them than the filched handkerchiefs which embower Field Lane, or the old clothes which festoon Monmouth Street: indeed, if one were to watch attentively, and for a sufficient length of time, there is little doubt that one would find the common file of the "city decorators of fronts," as they style themselves, flourishing about those regions of anti-taste, in quest of what they consider elegant forms and classical combination. We were once of opinion that, for motley shreds and tatters suspended along the fronts of the houses, Madrid beat all the capitals in the world, but since the people began to bedeck their old houses with the commodities of Rag Fair, we suspect that stucco in the one city outdoes the tattered garments in the other.

How a people who should possess some taste, or at least who can afford to pay for it, should thus outrage all taste, is matter of surprise; and that the windows should be so mean while they are so numerous, is an especial marvel. It is a common saying, "Practice leads to perfection," but the saying is either ironical, or it fails sadly in this instance. There is no city in the world where there are so many windows as in London, and from the frequent alterations and rebuildings, thousands of them are manufactured every year. Indeed, we question whether there are not more windows in the metropolis and its environs, than there are in the whole kingdom of Scotland, notwithstanding the elegance of many parts of the modern Athens, and the richness of some parts of Glasgow, and the fact that, in all Scotland, the people have light enough in their habitations. But, notwithstanding this enormous number of windows, and the great addition that is made to them every year by the rapid increase of new buildings, the taste in them is not improving, or, more strictly speaking, there is no taste in them at all. Of the new and spacious mansions which have been erected within the last five and twenty years, many of which have now become as antiquated in their style as the oldest in the city, some are utterly bad, some heavy and monotonous, some light and pasteboard-like, a few rather elegant, and fewer still excellent, or bordering upon excellence; and it is remarkable that scarcely a decent set of windows occurs. Many of the modern builders adhere most doggedly to the over supply in number, while those who get rid of the Scylla of this, run upon the old Charybdis of little holes, out of all proportion to the size of the mansion, and it is in what maybe called mansions that they are generally found. In the smaller houses, even of the remote suburbs, which are city all over, we

invariably find the excessive number of windows; and the houses themselves are, as planters say, "drawn up tender," like saplings in a thick-serried copse. This tree is of germinating growth, and has so taken hold of the constitution of all citizens, that they cannot get rid of it. Saving of ground in the city, where ground is dear, is the primary cause of this, and it is a cause of which no citizen, or copyist of city tastes and parties, can get rid of the effect, so that we believe that, though a citizen were to build a dwelling upon Salisbury Plain, or on Rannock Moor, in Scotland, where an acre of surface is hardly worth sixpence a year, he would run it up from a foundation of a few square feet, in order to save the ground. The storms of Rannock would, however, make him pay dear for his absurd parsimony; for the probability is, that, during the very first winter, his egg-shell of a habitation would tumble about his ears; and, under the influence of some of those Salisbury Plain south-westers, although the mighty masses of Stonehenge continually keep their ground, we suspect that he and his dwelling would be in the endlong predicament.

The densely built part of London, and such regions of desolation as we have named, are the extremes of contrast for the erection of a dwelling; and just as economy suggests the building of a house set on end in the one place, so it suggests a low and squat hovel in the other—if any one is foolish enough to construct a dwelling there, until the shelter of plantations is first formed, and that would be no easy matter. It does not appear that Salisbury Plain was ever wooded on the more exposed parts; and though there are a few apologies for trees about the "Druid's Head," and in some other places, their appearance is not very encouraging. Still, however, some trees, especially larches, might be grown on this plain, for, if there is ever so thin a soil, the total absence of timber is not the certain sign of the hopeless state. That sign, at least upon the elevated moors, is the dying out of a pine forest, under circumstances where mushrooms and mosses do not successively grow over the remains.

The situations which we have mentioned are the extremes, and require the extreme variation of style. There are, however, a vast number of gradations between them, and to each and all of them the style of building should be adapted, both in the form of the houses and the number and size of the openings. Thus, as building advances into the suburbs, the houses should occupy larger spaces, and the windows should be fewer in number than even a reasonable supply in the city, because there is more light and air, and as the distance gets greater and greater these country characters should be more and more increased. If one wishes to understand how miserable and meagre a thing a London house is when it stands apart, one has only to look at the first-built houses and carcases of an intended new row, in some field previously unbuilt upon. There it stands "like a pelican in the wilderness," or a cage for the capture of great birds, as lean and miserable as an old horse borne to the knackers,—with its phalanx of window holes resembling a huge grating for covering of a drain sink. Even when the row is completed, it has a wretched appearance in those situations where there are still spots of green field, and such tatters of hedges as wanton destruction has spared. It reminds one of the shop, and seems for all the world like a cut from a great web of check, the chimneys showing like a tattered fringe along one of the selvidges. This resemblance is most complete when a useless wall, with blind impressions resembling windows, extends along the top of the front, and conceals the roof: for this seems a bordering with lighter colour one way than the check below. This concealment of the roof is always an abomination, for it indicates either a flat roof or none at all, neither of which is at all suitable to the climate of Britain. A roof, as such, is as necessary a part of a British house as the walls, and far more so than the London rank and file of windows. Generally speaking, roofs are very ugly things; but the fault is in the architect, not in the roof itself; and the grand art is so to form and finish it as that it may be taken in as an appropriate part of the design, whether viewed right in front or obliquely. In this, few indeed have succeeded, and success is not easily attained when a row of buildings is stuck over with pillars or pilasters. But it is not incompatible with that style when applied to its original purpose; for many of the ancient temples, especially that of Minerva Parthenon at Athens, had very beautiful and ornamental roofs. In this country a roof does not accord well with a pillared building, unless where there is a detached peristyle standing considerably out from the walls; and in common, and more especially in civic dwellings, this is inadvisable. Astylar buildings are the ones in which the roof can be best taken in as part of the general design, and even they should be as much detached as possible. The Reform Club House in Pall Mall, by Barry, is the finest, and indeed the only fine instance of this in the metropolis.

Before we proceed to say something of the internal effect and consequences of the excessive number of windows, it may not be amiss to say a word or two respecting them as mixed up with pillars and pilasters. The effect in this case is always bad. There should not be more than one window in height between these appendages, especially when they are stuck to the wall, as is the case with demi-columns and pilasters. In such cases the building looks like a set of dwarfy apartments enclosed in the integument of something grand, or by similitude, very like an ass in a lion's skin. With detached columns the case is even worse, for then there cannot, with any thing like decency, be more than one set of openings, and these should be large, few in number, and near the floor, with all their ornaments in the same style as that in the elevation. It is doubtful whether windows are not bad in all such cases, and two rows or more of them are quite abominable. They reduce the apparent strength of the wall to nothing, and though the columns seem great sturdy fellows, panting under the load of the entablature and pediment, they impress one with the idea that they will turn Samsons; and, falling with their load, tumble it sheer through the wall into the building; therefore, they ought to be entirely discarded from those faces of a structure in which windows are required.

Only one word more respecting the introduction of parts which do not harmonize with windows, and the retaining of windows along with them. One fashion is, to have the first story rusticated, and a style of small columns either let into a notch, or raised projection in the front. If there are only two rows of windows, these get rid of some part of the incongruity, and a third story may be had in an attic, though that is, upon the whole, a clumsy, patchwork sort of thing.

But another point has to be considered, and that is, the effect of this patch of colonnades itself. If let back into a notch of the wall, one cannot examine it without thinking of the propriety of a pair of great folding doors to shut it up, and so protect it from the inclemency of the weather. Then again, when it projects, what does it put one in mind of? Not the building certainly, for it is no part of that. But still it puts one in mind of something, and

something substantial and at times most agreeable withal; and it is singularly appropriate in the city; and perhaps there ought to be no public buildings, from which a drove of hungry clerks issue at four or five of the clock, without this appropriate sight on the front. It is the exact effigy of a huge gridiron, which silently expresses the language of every people among whom a gridiron is known, and the literal translation of it in the city is, "London before all places in the world for a glorious beef-steak." The slovenly Greeks, of times long gone by, were wont to ornament their Doric friezes with the clean picked bones of the skull of an ox, and the greedy Romans followed the same fashion; but John Bull, whose information is more rich and racy, thus displays the symbol of that whereon to dress the choicest cut of the rump. Thus much for the externals, which, however tastefully arranged, would gratify only the sight of the observer; let us therefore consider the effect of the numerous windows upon the state of things within. When a room is so chequered by adverse and crossing lights, no object can be seen in its true colours; and where the wall is so bored with openings, there is no breadth for arranging even moderately sized articles of furniture against it. There is, therefore, no repose in the apartment, for no sooner have you escaped the annoyance of one flickering light than that of another is upon you; and if there are pictures on the walls, however finely they are tinted, you get as it were half a glimpse of them, and then comes another light which carries them into a different situation; and, for all the pleasure it affords you, the picture might as well be a black-japanned tea-board. This takes place at all seasons and in all states of the weather; but it is always worst when a room, with the proper number of windows, regularly placed, would be most agreeable. To convince one's self of this, one has only to visit one of those houses in which there are three or more windows in the front drawing-room, and one in the back. No matter into which of these the sun shines, or whether it shines into any of them; for if you stay some time in the front one and then go to the back, it is quite refreshing; but if you stay some time in the back one, and then visit the front, it is confusion and annoyance.

In these over-windowed apartments, the people are roasted in summer, and chilled in winter, in spite of all the blinds which the ingenuity of workmen has adapted to the two seasons; and this, even amid an excess of light, renders the apartment gloomy and disagreeable. When the air stirs, the room is full of conflicting currents, striving like the adverse winds on the great sea; and, wherever you take your seat, you are sure to be in one of those currents, and frequently two of them assail, so that if you escape without a rheumatism, a stiff neck, or cold, you are fortunate indeed. Now, if instead of this assemblage of small windows, there were only one large window in the middle of the front, there would be far more beauty, repose, and comfort in the apartment, supposing it of exactly the same size. Objects would be seen in one light, and therefore seen better; there would be breadth against the front wall for the display of furniture; the apartment would be cooler in summer and warmer in winter, and it would be free from annoying draughts and currents of air; the only currents that would be in it would be one from the window and one from the door, which, from the size of the former, would be much less dangerous than the small current from one of a number of windows; and, as they would not clash with each other, they would ventilate the room much better. Therefore, by the excess of windows the landowners render their houses as ugly as possible without, and as comfortless within.

REVIEW.

Companion to the Almanac for 1842. Knight & Co.

Very few of our readers, we presume, require to be informed that, under the general head of "Public Improvements," this publication, which we hold to be the best of annuals, has, for several years past, given an account of the principal buildings either commenced or completed at the time of their being spoken of. Still it is possible that some may not, since, notwithstanding the very extensive circulation of the Companion, we have met with architects who have not been aware that such is the case; consequently, it may not be altogether superfluous to remark, that the architectural report forms a very prominent and interesting feature in each volume, more especially as it is illustrated with wood-cuts. These last are of course upon too small a scale to be as satisfactory as could be wished, nevertheless they serve to show the general design of the structures explained by them; and we may also add, that progressive improvement has manifested itself in regard to them, for the cuts in the earlier volumes will bear no comparison with those in the later ones, especially in this present one, as regards distinctness and carefulness of drawing. Decided improvement has also taken place within the few last years in the descriptions themselves, which, though more brief than could be wished, show the writer to be well qualified for his task, and able to enter into the subject with true relish for it. Indeed, we do not remember to have anywhere met with more intelligibly, or more intelligently, written notices of the kind. In fact, the "Companion" has now accomplished very much towards the history of architecture in this country since the commencement of the work, as it affords excellent materials for such purpose. Neither is it the least of its services, that it has tended to bring architectural subjects and topics before the public generally, whereas, however important they may be in themselves, buildings scarcely obtain any notice whatever, even in those publications which profess to speak of the fine arts generally.

Among those structures which have been more fully described and commented upon in the Companion, are the National Gallery; Fitzwilliam Museum, Cambridge; Victoria Rooms, Bristol; London and Westminster Bank; Synagogue, Great St. Helens; Derby Athenæum; Trinity church, Greenwich; St. Lawrence, Southampton; Lee church; Trentham Hall; Reform Clubhouse, &c. In the present volume the principal subjects are the new church at Streatham, by Mr. Wild; St. Mary's, Southwark, by Ferrey; Trinity chapel, Poplar, by Hosking; the Roman Catholic church of St. Chad's, Birmingham, by Pugin; St. George's Hall and Assize Courts, Liverpool; Collegiate Institution, Liverpool, both by Elmes, jun.; and the Savings Bank, at Bath. All of these, with the exception of St. Chad's, are very satisfactorily illustrated by wood-cuts, which are far more carefully executed than they hitherto have been, and their being merely in outline is a considerable improvement, for they are now very much more distinct.

Whatever be thought of the particular taste shown in the church at Streatham, which is in the Lombardic style, it must be acknowledged that Mr. Wild has here accomplished a novelty, and has completely got out of that dull hackneyed track to which nearly all the builders—hardly can we call them architects—of our new churches confine themselves, giving us little more than so many boxes of brick-work, as paltry as they are ugly, both withinside and without. The usual excuse pleaded for the horribly bad taste dis-

played in such structures is the scantiness of the funds provided for them, whereas it ought rather to be imputed to the extreme scantiness of their own ideas, and also to the ignorance, the obstinacy, and the tastelessness of church commissioners and committees. That considerable character and expression may be produced in a building of the kind, remarkably simple in form, and with very little amounting to enrichment, is proved by what Mr. Wild has here done, by merely treating his subject artistically, and with architectural feeling: for though, in fact, simple almost to severity, the simplicity here observable is altogether of a different cast from that which is produced, or rather, attempted to be produced, by *paring down* and impoverishing details, by leaving some parts quite bare and naked, in order to bestow a little finery on others, to the utter abandonment of the principles and character of the style professedly adopted; and not only to the abandonment of style, but of all consistency of architectural composition. Quitting the church-building routine of the day, which is satisfied with imperfect, partial copyings of what are considered safe models, and which, while it insists upon imitation, chiefly produces parodies of them, without leaving a trace of the spirit of the originals, the author of Streatham church has ventured to think for himself, and to adopt a style which, though exotic in this country, is better adapted for buildings of the kind as now required, than some of those which, although indigenous to it, are, as generally treated, most unsuitable to the purposes to which they are applied. Notwithstanding, however, the merit of Mr. Wild's design, we are by no means surprised at learning that its success was for a long while doubtful, that strong opposition was made to it, and that the committee would have rejected it at once, no doubt as being altogether *nondescript*, but for the strenuous support it received from the Rev. W. Raven. On being afterwards submitted to the Diocesan Society of Winchester for their approval, it was returned as "unfit to be built;" which sentence, considering what kind of things are built for churches and chapels, must have been truly mortifying or supremely consolatory. "Unfit to be built!" how facetiously satirical on themselves! It seems, however, that the favourable notice which the design obtained, on its being exhibited at the Royal Academy, opened people's eyes to merits in it they could not discern before. It was then discovered that there was considerable beauty and piquant character in what had been objected to as its *outlandishness*, and that its *queer* campanile was a most picturesque adjunct to the building,—an architectural feature of more than ordinary value. That first design has not been strictly adhered to in the building itself, some modifications having been made in it, which are, however, upon the whole, improvements. The principal deviation from it consists in the substitution of the present cavetto cornice for wooden eaves or rafters. Owing to its being executed in red and white moulded bricks, this cornice is now brought into perfect keeping with the mode of decoration employed for the three arches of the west front, and the ornamental circular window, surrounded by radiating lines, over the centre arch or porch. The same species of embellishment has also been extended to the string-courses and some other members. Another variation from the original design is, that the campanile is made loftier than was first proposed. The general character is perfectly well kept up in the interior, which is, upon the whole, perhaps even still more striking and uncommon than the exterior, or, at least, will be so when it shall have been completed in its decoration according to the architect's ideas, which will not be till after some time, it being purposely left in an unfinished state for the present, until additional funds shall have been provided for properly completing it: an example well worthy of being followed, since it is surely far more judicious and economical to leave a good design for a while imperfect, than to maim and spoil it, and mar the whole intention, for the sake of turning it out of hand as quickly as possible.

Though less original in its design, Mr. Ferrey's church is also a favourable exception from those usually manufactured according to church-commissioners' notions of propriety and taste. The architect, as is observed, has shown his discretion "in not attempting too much, but endeavouring to produce effect rather by form than by decoration." Hence, though the building is small, and in the plain early pointed style, without mullions to the windows, it has nothing of that meagre starved look, or of that flat and vulgar bandbox spruceness which so frequently offend the eye in our modern Gothic churches. It is, in fact, a very pleasing and picturesque composition, one that is marked by a great deal of effect, notwithstanding that there is apparently very little aim at it, whereas we generally meet with far more ambitious pretension, common-place and paltry in itself, than of any ability as to treatment and effect.

We cannot say quite so much in favour of the chapel at Poplar, notwithstanding that both an elevation and section are given of it. What chiefly recommends it to notice is, the mode employed for obtaining a series of clerestory windows, cut out of the roof in such manner as not to be at all visible externally; a very good idea in itself, and so far deserving of being brought forward; but it would have been a great improvement had the architect been allowed to dispense with other windows, and light his building entirely from the clerestory, or by a continuous lantern similarly planned.

As a mere notice of the Companion, more especially as it is a work whose character is well established, what we have said is not only sufficient, but may seem excessive as to length. Yet, as it is not so much the publication as the new buildings described in it which form the subject of our review, instead of now dismissing it, we purpose returning to it again in a second article, in order that we may give such account of the remaining structures and projects as their importance claims for them from an architectural journal.

LIST OF PATENTS.

Continued from page 264.

(SIX MONTHS FOR ENROLMENT.)

Robert Wilson, of Sowerby Bridge, Halifax, currier and tanner, for "improvements in the manufacture of leather."—Sealed December 2.

William Irving, of Prince's Street, Rotherhithe, gent., for "improvements in the manufacture of bricks and tiles."—Sealed December 7.

James Colman, of Stoke Holy Cross, Norfolk, starch manufacturer, for "improvements in the manufacture of starch."—Sealed December 9.

William Henry Fox Talbot, of Lacock Abbey, Wilts, esq., for "improvements in coating or covering metals with other metals, and in colouring metallic surfaces."—Sealed December 9.

John Hall, of Breezes Hill, Ratcliffe Highway, sugar refiner, for "improvements in the construction of boilers for generating steam, and in the application of steam to mechanical power."—Sealed December 9.

Archibald Templeton, of Lancaster, silk spinner, for "a new and improved method of preparing for spinning silk and other fibrous substances."—Sealed December 9.

Jonathan Guy Dashwood, of Ryde, Isle of Wight, plumber, for "improvements in the construction of cocks and taps."—Sealed December 9.

Moses Poole, of Lincoln's Inn, gent., for "improvements in the construction of masts for ships and vessels, and in applying the shrouds," being a communication.—Sealed December 9.

Josiah Taylor, of Birmingham, brass founder, for "improvements in the construction of lamps."—Sealed December 9.

Robert Henderson, of Birmingham, china dealer and glass stainer, for "certain improvements in apparatus for heating and lighting apartments, and for other like purposes."—Sealed December 2.

Henry Wilkinson, of Pall Mall, gun maker, for "improvements in machinery to be used in constructing buildings, and in raising and lowering weights and materials," being a communication.—Sealed December 9.

John Edwards, of Shoreditch, warehouseman, for "improvements in giving signals on railways."—Sealed December 11.

William George Henry Taunton, of Liverpool, engineer, for "improvements in machinery for raising weights."—Sealed December 11.

William Westley Richards, of Birmingham, gun maker, for "improvements in the construction of gun and pistol locks, and primers for the discharge of fire-arms."—Sealed December 14.

William Edward Newton, of Chancery Lane, civil engineer, for "certain improvements in printing or delineating patterns on painted cloths, for floor-cloths, covers, and other uses," being a communication.—Sealed December 14.

Francis Marx, of Eaton Square, esq., for "certain improvements in the construction of ships and other vessels, and the method of propelling them," being a communication.—Sealed December 16.

William Milson, builder, residing in Glasgow, and David Lyon, builder, residing in Tradestow, Glasgow, and Peter M'Oine, engineer, of Kinning Place, Glasgow, for "a mode or modes of, or an improvement or improvements in, cutting, dressing, preparing, and polishing stones, marble, and other substances; and also in forming flat or rounded mouldings and other figures thereon."—Sealed December 16.

Charles Edward Austin, of Fulham, civil engineer, for "an apparatus for what is commonly called changing the line on railways."—Sealed December 16.

James Stewart, of Osnaburgh Street, Regent's Park, piano-forte maker, for "an improvement in the construction of castors."—Sealed December 16.

William Prowett, of Northamptonshire, victualler, for "improvements in giving signals on railways."—Sealed December 16.

Henry Booth, of Liverpool, esq., for "improvements in the method of propelling vessels through water."—Sealed December 16.

John Norton, of the Junior United Service Club, Regent Street, esq., for "improvements in sheathing ships and other vessels."—Sealed December 16.

Antoine Mertens, of the London Coffee House, publisher, for "improvements in the manufacture of plaited fabrics."—Sealed December 16.

NOTICE.

We very respectfully inform our readers that from and after the commencement of our Third Volume, the first number of which will appear on the 1st of February, 1842, the size and price of "The Surveyor, Engineer, and Architect," will both be altered. The price will be raised to One shilling and sixpence, and an additional sheet of matter will be added to the size, a steel plate as usual, and wood-cuts where they appear to be necessary. It is hoped that the reasons for the increase of price, coupled as they are with the increase of quantity, will be found satisfactory. As to the price alone, it is increased so that the returns of the work may more nearly cover the expence of its production. As matters stand at present, it would have paid, and indeed left a profit as an ordinary work; but, besides the superior style in which it is got up, there are heavy expenses which the public cannot well appreciate. The obtaining and verifying of such a quantity of matter purely original, and writing of so many subjects, is, besides the immense labour, attended with vast expense, and this expense cannot be reduced, nor could it be met by the profits on the sale of so small a work. This vast expense was not anticipated by the original projectors of the work, and so they did not provide against it. So much expense beyond what they calculated has been incurred in conducting the work, that some addition to the price has become necessary; and the beginning of the third volume has been thought the best time for this necessary and imperious change, a change of which we hope our readers will see the propriety, and join with us in the approval of it. Besides this pecuniary consideration, there is one of still greater importance, the necessity of which has become peculiarly urgent at the time of making the change. The Conductor, though he has introduced into the work many topics not included in works of a similar nature, or indeed, any periodical work whatsoever, has yet been all along anxious to increase their number, so as to render the work equally complete and varied in information. Three causes have co-operated in retarding the full adoption and development of these matters. In the first place, there was great difficulty in engaging the assistance of the parties required, because it was difficult to find them, and still more difficult to get them to write for a periodical, even in the furnishing of notes—the greatest trouble which is consistent with the inclination, and the professional occupations, of men of the highest class. The Conductor has the satisfaction of announcing that he has at length secured ample assistance in this way—assistance which will enable him completely to fulfil what he has long wished, and already in part accomplished and acted upon; but, generally speaking, the names of these parties will not be published.

In the second place, there was a want of room for the proper development of the matters alluded to, and this was complained of by several of the parties whose co-operation was the most desirable. They wished that there should be a reasonable portion of miscellaneous or selected matter; and as many of the original articles are rather long, the insertion of both that and these was found to be impracticable.

To abbreviate and garble these original articles would, in all instances have broken their connection, and in many destroyed their spirit, and there are nearly the same objections to the extending of an article into more than one number, unless in the case of such as have no general argument running through them; and they are articles which, for obvious reasons, are not desirable. The additional sheet will give scope for original matter to a very considerable extent,and thus there will be room for giving to the work that diversity which, it is hoped, will add greatly to its value. We shall not publish the names of any of our correspondents without their own permission and wish; for a great name is apt to draw the attention from the matter treated of; and if, as will sometimes be the case, the party named is, whether justly or unjustly, disliked, what he communicates will, independently of its merits, share in the dislike which the contributor labours under. A wish has, in some instances, been expressed, we do not say by the parties themselves, that the names of individuals belonging to professions, should be published as conductors to those professions. To this there is an insuperable objection; the naming of a professional man as conductor of what related to his own profession, would be sure to offend some parties, and give an air of partiality in the opinion of all.

We think it fortunate that our purpose of adding to the variety and quantity of matter in the Journal, should be attended with a great additional force; and we are still more happy to say, that as this is on the increase, we shall redouble our own efforts, and endeavour to procure the same on the part of all concerned, in the anxious hope that a discriminating public will not let us go without our reward.

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